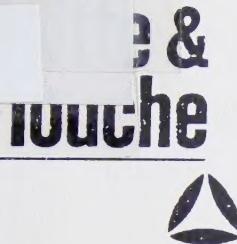


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# Bay Area Rapid Transit District Revenue Management and Control Assessment

FINAL REPORT

November 4, 1991



# Deloitte & Touche



November 4, 1991

93 00472  
1900 M Street NW  
Washington, DC 20036-3564  
Telephone (202) 955-4000

Ms. Erlene DeMarcus  
Board President

Mr. Frank J. Wilson  
General Manager

Mr. Alvan Teragawachi  
Controller

San Francisco Bay Area Rapid Transit  
P.O. Box 12688  
800 Madison Street  
Oakland, CA 94604-2688

Subject: Delivery of Final Report on the Revenue Management and Control Assessment to the Steering Committee

Dear Ms. DeMarcus, Mr. Wilson and Mr. Teragawachi:

Deloitte & Touche is pleased to submit the attached final report on the assessment of the revenue management and control function at the Bay Area Rapid Transit District (BART). The objectives of our work for BART were:

- To develop forward-looking, management-oriented recommendations for improving the revenue management function at BART; and
- To integrate the recommendations into a summary management plan for timely, effective and efficient implementation.

Our summary conclusions from the work performed at BART are based on the following two questions which engendered the study:

1. Is BART continuing to lose money to theft; and
2. Is BART performing its revenue management and control function effectively and efficiently?



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Ms. Erlene DeMarcus  
Mr. Frank J. Wilson  
Mr. Alvan Teragawachi  
Page 2

We have concluded that over the past two years, the potential for large, systematic theft at BART has been significantly reduced. However, there remain weaknesses in the revenue management function at BART that require attention. In terms of effectiveness and efficiency, many appropriate and beneficial actions have been taken over the past two years by the Controller-Treasurer and General Manager to improve revenue management and control. However, the improvements have been made to an antiquated process requiring major re-design and upgrade. Our general and specific recommendations for accomplishing the desired improvements to the revenue management and control function at BART are included in the attached final report.

We have enjoyed working with the Steering Committee on this important engagement. If you have any further questions or comments on the attached final report, please contact Robert J. Lesko directly at (202) 955-4190 for their resolution.

Very truly yours,

*Deloitte & Touche*

Attachment

Deloitte &  
Touche





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Appendix A: Chronology of CHB Control-Related Activities at BART



## EXECUTIVE SUMMARY

The revenue collection and handling function within BART can be characterized as recently awakening from 20 years of neglect. Also, within the past two years, the District had to respond to the highly publicized arrest and subsequent convictions of two long-time management employees who systematically and over time stole revenue from BART. In response to the discovery of these criminal acts, actions were taken by BART management to mitigate the risks of loss by theft within the District. The actions have included tightening building security at the Cash Handling Building (CHB), commissioning an independent audit of cash handling procedures, initiating limited physical security procedures for automatic farecard machines (AFCs), and other procedural actions extending over an eighteen-month period. (See Appendix A for a detailed chronology.) The net result of these actions has been to address the most obvious security weaknesses and to initiate focused management responses to specific problems associated with control of revenue management within the District. These first steps by management were seen as appropriate, although limited, by the BART Board of Directors.

In April, 1991, to address the longer term improvement of revenue management within the District, the Board commissioned a study of controls for security and operations and selected Deloitte & Touche to perform the study. (The scope of the Board Resolution is presented below in Exhibit 1.) The work performed in the study was focused on control of the revenue management function at BART. Consequently the specific technical recommendations flow from the concentration on revenue management control (see Section IV). Additionally, general observations concerning revenue management operations, security, information, organization, and project structure were made by the study team and, wherever appropriate, recommendations were developed for improvements in these areas (see Section III). Finally, the study team developed project structures and a phased schedule for implementing the initiatives resulting from the recommendations (see Section V).

### STUDY OBJECTIVES AND APPROACH

The objectives of the assessment of revenue management and control activities at BART were as follows:

- To develop forward-looking, management-oriented recommendations for improving the revenue management function at BART, with an emphasis on controls; and
- To integrate the recommendations into a summary management plan for timely, effective and efficient implementation.

To fulfill these objectives, the Deloitte & Touche study team performed a review and analysis of all of the organizational functions within BART relevant to revenue management and control. Activities associated with this study consisted of the following:

- Interviews of key personnel from the financial, security, information systems, planning and other areas;
- Reviews of paper trails and policies and procedures associated with the process; and
- Reviews of actual revenue handling operations as they are performed in the field (during revenue collection in the stations and cash handling in the CHB).



EXHIBIT 1: SCOPE OF BART CASH MANAGEMENT STUDY

A PRELIMINARY REVIEW OF ALL ASPECTS OF THE DISTRICT'S FAREBOX CASH OPERATIONS AND COSTS TO THE DISTRICT;

AN ASSESSMENT OF THE ORGANIZATIONAL ROLES AND RESPONSIBILITIES OF THE TREASURER'S DEPARTMENT, THE CONTROLLER'S DEPARTMENT, AND OTHER DEPARTMENTS ASSOCIATED WITH ACCOUNTING, COLLECTION, AND OPERATIONAL COMPONENTS OF FAREBOX REVENUE COLLECTIONS;

SECURITY CONTROLS WITH RESPECT TO CASH HANDLING EQUIPMENT, FACILITIES, AND PERSONNEL;

FAREBOX REVENUE RECORDING AND REPORTING CONTROLS, INCLUDING VARIANCE ANALYSIS PROCEDURES;

OVERALL FAREBOX REVENUE CONTROLS FROM THE TIME PATRON PURCHASES A TICKET THROUGH THE BANK RECONCILIATION PROCESS;

TICKET STOCK CONTROL, INCLUDING DEVELOPMENT AND PURCHASING (INCLUDING THE VENDOR'S CONTROLS OVER BLANK PLATES AND STOCK), SALES AND USE BY PATRONS, BLANK TICKET STOCK CONTROL, AND DESTRUCTION OF USED TICKETS;

CONTROLS OVER ALL AFC ACCESS BY ALL BART PERSONNEL; AND

DATA ACQUISITION SYSTEM (DAS) AS AN ACCESS, RECORDING, AND REPORTING CONTROL.



## STUDY RECOMMENDATIONS

Based on our review and research of the revenue management function at BART, Deloitte & Touche recommends that the BART Board and management team adopt the following three revenue management goals and corresponding initiatives:

**Goal (1):** **Perform internal control and security for the District's revenue management function through policies, systems, and procedures which are clearly understood, easy to use, sound, and compatible with effective and efficient operations.**

The internal control of revenue management within the District includes not only the procedures for the collection and counting of revenue, but also access by BART personnel to AFCs and tickets. The following initiatives are recommended to improve internal control and security:

- **Simplify controls in the CHB by implementing a comprehensive "Point-to-Point" controls program which ties control documents to specific points in the process when the cash is transported.** Controls for the CHB are present but are cumbersome and in need of simplification and automation. Most of the control and reconciliation activity for the CHB takes place in Treasury Accounting. While this is acceptable from a control perspective, the CHB should be able to reconcile uncounted cash receptacles through the different stations in the building in a more efficient and effective manner. A comprehensive set of specific recommendations constituting the majority of the analytical work in the study and covering each "point" in the cash handling process is presented in the body of this report. (HIGH PRIORITY RECOMMENDATION)
- **Maintain the accuracy and reliability of and initiate periodic tests conducted by Internal Audit to verify the performance of the Data Acquisition System (DAS) mechanics, electronics, and information recording.** Use results from the test to calibrate the system. Although DAS functions adequately as a security device identifying specific breaches in the BART system and is now the standard for cash control, improvements are needed to fully utilize DAS as a control tool. Having adopted DAS as the principal control tool, the Controller-Treasurer should specify performance requirements for DAS concerning both revenue management security and control. (HIGH PRIORITY RECOMMENDATION)
- **Require coded key access to identify individuals accessing AFC machines and step-up security by improving DAS reporting and alarms.** While re-keying efforts and station agent sign-out keys are appropriate first steps to discourage fraudulent access to AFC machines by unsupervised parties, these actions will not provide all the information needed to attribute fraudulent acts to a particular individual. Relatively modest improvements to automate the interpretation of DAS alarm data will yield measurable benefits in District-wide security for AFCs. (HIGH PRIORITY RECOMMENDATIONS)
- **Develop comprehensive ticket security procedures to reduce the risk of fraudulent ticket manufacturing and use.** The procedures should include ticket vendors, blank ticket stock, ticket handling and exchanges, encoders, and used tickets.



- Contract out revenue guard services to significantly diminish the potential for fraternization between cash collectors and revenue guards. Management of the revenue guard contract should be reassigned to the Controller-Treasurer (from the Police) to ensure operational responsiveness. Contractor performance and security audits should be performed periodically by Internal Audit.
- Improve control and security information systems and reporting for all appropriate organizational units in the District.
- Reassign the revenue audit function (i.e., examination and verification of variances reported between actual collections and DAS control) to the Assistant Controller (from Treasury Accounting). This organizational restructuring will improve upon the "checks and balances" of the control function for revenue audit.
- Conduct a comprehensive, function-wide review of the revenue management function at BART on a regular basis through Internal Audit.

**Goal (2): Manage and operate the revenue function for the District in an effective, efficient, and cost-conscious manner and, thereby, minimize the exposure of District revenues to theft.**

Because farebox revenue represents approximately 50% of the District's annual income, the goal will be realized by processing the revenue and depositing it into BART's bank accounts as expeditiously as possible. This initiative will also add to the District's income through interest generated on balances, while significantly reducing the potential for revenue loss by theft. To achieve this recommended goal, the following initiatives are recommended for BART:

- Deposit cash collected in banks within one day of collection, adopting the following phased specific objectives and timeframes (HIGH PRIORITY RECOMMENDATION):
  - Six-to-nine month objective: deposit cash within 48 hours of collection; and
  - Nine-to-twenty-four month objective: deposit cash within 24 hours of collection, with currency paper deposited directly on the day it is collected.
- Redesign and re-engineer cash collection and handling policies, methods, procedures, workflows, and resource management to improve efficiency and effectiveness through the following activities (HIGH PRIORITY RECOMMENDATION):
  - Perform a comprehensive process analysis of handling and collection based on industrial engineering principles incorporating operational (e.g., 24-hour deposit), control (e.g., "point-to-point" program), and security initiatives;
  - Utilize DAS more fully to determine collection schedules and staff resource allocation in combination with assessments of risk of theft;
  - Design and test simple initiatives with short-term payoffs including:
    - Process the cash from IBM equipment without facing the bills;
    - Measure the impact on workload of collecting cash from less than 100% of all AFCs; and
    - Investigate designing and implementing simple retrofits for IBM stackers;



- Work with unions to expedite improved scheduling of staff and shifts accommodating next-day deposit of cash receipts;
- Acquire appropriate CHB equipment to enhance redesigned operations, if justified; and
- Perform periodic, detailed cost benefit and cost effectiveness analyses to determine if all or parts of revenue management functions would be better performed by outside contract services.

- Develop initiatives to help realize 24-hour deposit of revenues collected through the following activities:
  - Test direct deposit of uncounted revenues to the bank; and
  - Field-test the use of credit and debit cards and other technologies that decrease currency handling.
- Develop operational and capital plans for replacing the IBM AFC equipment to increase the effectiveness and efficiency of cash handling operations. Consistent with requirements for patron-service and the extension line openings, phased replacement of the IBM equipment should be undertaken. This recommendation is made recognizing that the resources required to accomplish this initiative will be very large and that careful integration with the Extension program is required. IBM equipment drives the two most time-intensive activities in the cash handling building (CHB): bill-stacking (which takes approximately 60 person-minutes per IBM vendor bag) and change magazine refilling (which takes approximately 15 person-minutes per magazine set). These tasks are required to prepare IBM bills for cash counting as well as to service coin changers. The time for these tasks could be cut down significantly if modernized equipment was installed replacing the IBM machines. The specific objectives recommended are:
  - To reduce the time required for bill stacking to five minutes per machine from the present 60 minutes; and
  - To reduce the time required for coin supply machine refills to three minutes per machine served from the present 15 minutes.

Before proceeding with a large capital acquisition program, the impact of the simple, short-term payoff improvement initiatives should be integrated into the decision.

**Goal (3): Oversee the District's revenue management function actively and continuously.**

In order to maintain a high level of performance, it is important to monitor the various elements of the revenue management function on a regular basis. As with other major operating areas of BART, there are measurable performance standards which should be



monitored such as: average length of time to deposit receipts; size, number, and frequency of revenue variances; performance of the AFC equipment; and number of prosecutions for thefts. The following specific objectives are recommended to improve management oversight of the revenue management function:

- Develop and present to the Board and senior management regular reports regarding performance of revenue management in terms of operations, productivity, and variances. These ongoing reports should be supplemented by formal internal performance audits approximately every two years. Reliable data must be provided to all levels of management to ensure an adequate audit trail of all revenue-related activities. The Board and senior managers must be assured that BART has the necessary controls and systems to detect revenue loss in a timely manner and provide reliable evidence to identify the source of problems.
- Continue the special Board-appointed oversight group to monitor the planning and implementation of a coordinated improvement program. The oversight group should continue to be composed of the President of the Board or designee, the General Manager, and the Controller-Treasurer. It is estimated that the required term for the oversight group will be approximately 24 months.
- Establish a program management team to the implement improvements for the District's revenue management in the areas of control, operations, security, organization. The program manager should carry the authority and responsibility of implementing changes throughout the District, crossing traditional organizational boundaries, if necessary. The program manager should submit an initial plan to the oversight group within 30 days of approval of the program.

## MANAGEMENT IMPLEMENTATION PLAN

To expedite implementation of the revenue management recommendations, Deloitte & Touche recommends that a high-priority program management structure be created within BART for a limited time to manage the work. The great majority of the work for improving the revenue management function will be focused on, or have the highest impact on, operations and organizations under the direction of the Controller-Treasurer. Our assessment of the present workload of the senior management team reporting to the Controller-Treasurer is that it is heavy and difficult. The additional work required by the recommended initiatives in this study would overtax an already heavily committed team. For this reason, we recommend that a program manager be reassigned from outside of the Controller-Treasurer's organization to manage the additional work under the principal direction of the Controller-Treasurer and reporting to the Steering Group. The requirements for the individual include the following:

- An understanding of BART operations, policies, and plans;
- A technical background (e.g., engineering or operations);
- Experience in managing multiple projects; and
- A proven record of delivering results on-time and within budget.



## I. STUDY OBJECTIVES AND METHODOLOGY

Deloitte & Touche is pleased to submit this final report presenting our recommendations for and supporting analysis of the revenue management function at the Bay Area Rapid Transit (BART) District. In April, 1991, to address the longer term improvement of revenue management within the District, the Board commissioned a study controls for security and operations. Deloitte & Touche was selected by the Board to perform the study. (The scope of the Board Resolution is presented below in Exhibit I-1.)

### A. STUDY OBJECTIVES

The objectives of the assessment of revenue management and control activities at BART were as follows:

- To develop forward-looking, management-oriented recommendations for improving the revenue management function at BART, with an emphasis on controls; and
- To integrate the recommendations into a summary management plan for timely, effective and efficient implementation.

The work performed in the study was focused on control of the revenue management function at BART. Consequently, the specific technical recommendations flow from the concentration on revenue management control (see Section IV). Additionally, general observations concerning revenue management operations, security, information, organization, and project structure were made by the study team and, wherever appropriate, recommendations were developed for improvements in these areas (see Section III). Finally, the study team developed project structures and a phased schedule for the initiatives resulting from the recommendations (see Section V).

### B. ASSESSMENT METHODOLOGY

Our assessment of revenue management and control at the Bay Area Rapid Transit (BART) District was performed largely on-site at BART over a two-month period extending from April 22 through June 21, 1991. The work was performed by management consulting Principals and professional staff from Deloitte & Touche and Anne P. Canby, an independent transit industry revenue management and control consultant.



## EXHIBIT I-1: SCOPE OF BART CASH MANAGEMENT STUDY

A preliminary review of all aspects of the District's farebox cash operations and costs to the District;

An assessment of the organizational roles and responsibilities of the Treasurer's Department, the Controller's Department, and other departments associated with accounting, collection, and operational components of farebox revenue collections;

Security controls with respect to cash handling equipment, facilities, and personnel;

Farebox revenue recording and reporting controls, including variance analysis procedures;

Overall farebox revenue controls from the time patron purchases a ticket through the bank reconciliation process;

Ticket stock control, including development and purchasing (including the vendor's controls over blank plates and stock), sales and use by patrons, blank ticket stock control, and destruction of used tickets;

Controls over all AFC access by all BART personnel; and

Data Acquisition System (DAS) as an access, recording, and reporting control.



To accomplish the objectives of the study, the Deloitte & Touche study team performed a review and analysis of all of the organizational functions within BART relevant to revenue management and control. Activities associated with this study consisted of the following:

- Interviews of key personnel from the financial, security, information systems, planning and other areas;
- Reviews of paper trails and policies and procedures associated with the process; and
- Reviews of actual revenue handling operations as they are performed in the field (during revenue collection in the stations and cash handling in the CHB).

The information-gathering and review activities of our assessment consisted of the following:

- 1) Interviewing personnel related to revenue collection and control operation at BART consisting of personnel from:
  - Treasury (including Treasury Accounting and Cash Handling Operations);
  - Controllership (General Accounting);
  - Field Services (including Station Operations);
  - Communications & Component Repair (AFC Maintenance);
  - Facilities Maintenance;
  - Engineering;
  - Development (related to Extensions Planning);
  - Marketing, Media, and Customer Relations;
  - Planning;
  - Management and Budget;
  - Employee Relations;
  - Information Systems;
  - Procurement and Materials Management;
  - Internal Audit;



- Assistant General Manager Operations; and
- Executive Manager, Safety & Investigations.

2) Reviewing the following documents:

- Job descriptions for key-related positions;
- Paper trails from cash collection, cash handling, and Treasury;
- Existing policies and procedures for the Cash Handling Building, Station Agents, and Police;
- DAS reports and associated distribution lists;
- Treasury Accounting produced reports and associated distribution lists; and
- Cash-related journal entries, bank statements, etc., from General Accounting.

3) Reviewing the following operations in the field:

- Operation and security of the AFC equipment
- Testing of a sample of AFC machines for comparison of actual cash entered versus DAS;
- Accompanied and observed cash collection crews; and
- Review Cash Handling Building operations including:
  - Collection cart loading and check-in,
  - Movement of day's collections into the vault,
  - Sorting and counting activities,
  - Reconciliation and recording of daily Cash Handling Building activity, and
  - Day-end vault count and reconciliation.
- Performing an independent reconciliation of a typical day's activity to assess controls and identify opportunities for operational improvements.
- Obtaining Fiscal Year 1992 budgets for all departments with costs directly aligned to revenue collection and control. Developing cost allocation factors for budget items not totally related to revenue management and control. Developing approximate cost (\$8 - \$9 million) for revenue management and control at BART.

Throughout the process, the project team would meet to discuss potential findings and recommendations and additional areas of investigation. Progress and refinements to the assessment were communicated to the Project Steering Group in weekly status meetings.



## II. OVERVIEW OF CURRENT REVENUE-RELATED ACTIVITY AT BART

The revenue collection and handling function within BART can be characterized as recently awakening from 20 years of neglect. Also, within the past two years, the District had to respond to the highly publicized arrest and subsequent convictions of two long-time management employees who systematically and over time stole revenue from BART. In response to the discovery of these criminal acts, several actions were taken by BART management to mitigate the risks of loss by theft within the District. The actions have included tightening building security at the Cash Handling Building (CHB), commissioning an independent audit of cash handling procedures, initiating limited physical security procedures for automatic farecard machines (AFCs), and other actions extending over a two-year period. (See Appendix A for a detailed chronology.) The net result of these actions has been to address the most obvious security weaknesses and to initiate focused management responses to specific problems associated with control of revenue management within the District. These first reactive steps by management were seen as appropriate, although limited, by the BART Board of Directors.

Specific activities undertaken by the BART Board and management in response to the issues surrounding the revenue management problems include the following:

- Tightening internal security policies and procedures for revenue collection routes and operations within the Cash Handling Building;
- Commissioning an independent audit of revenue collection procedures by the firm of B.D.O. Seidman;
- Initiating improvements for the use of the electronic Data Acquisition System (DAS) to support revenue management control and security functions;
- Implementing security procedures for controlling key use by maintenance employees for access to automatic farecard machines (AFC);
- Changing the layout of the Cash Handling Building (CHB) to improve security for common areas of the building and redesigning the surveillance system enabling management to better observe activities on the CHB floor;
- Transferring the Treasury Accounting (Revenue Audit) function out of the CHB; and
- Initiating analysis of new equipment and new technologies (e.g., credit and debit card payments) to increase efficiency in the cash handling processes.

A more detailed listing of specific steps taken within the past two years has been provided by the Controller-Treasurer and is included in Appendix A to this report.

### A. ORGANIZATIONAL RESPONSIBILITIES

As stated earlier, our review was cross-organizational and included an analysis of the roles of all organizations related to revenue collection and control. Consistent with our objectives the study team focused only on organizational units with a definitive impact on the revenue management and control process. The organizations reviewed and their



responsibilities are highlighted in Exhibit II-1, below. Specific organizational responsibilities related to revenue management and control at BART include the following:

Controllership: Prepares journal entries for cash transactions. Acts as a check and balance by comparing bank statements with actual deposits. Determines monthly unearned revenue adjustment representing ticket revenue obtained for trips never to be taken.

Communications & Component Repair: Repairs and maintains AFC machines holding cash collections from customer ticket sales, ticket value increases (addfares) or change. Also provides repair to CHB machine equipment where possible. Receives information on machine problems from CHB, Treasury Accounting, and Station Operations.

Management Information Systems: Provides support and programming of systems for bill and coin counting and control reporting needed by Treasury Accounting. Since the control standard has changed to DAS, MIS is still in the process of developing these control reports.

Marketing, Media & Customer Relations: Develops contracts for special ticket sales with off-site vendors and accepts passenger refund paperwork. This appears to be their only involvement with the revenue management and control process.

Police: Provides the following services:

- Armed protection by Revenue Guards for the CHB collection crews;
- Security by Revenue Guards for the CHB building;
- Surveillance by Revenue Guards of the CHB for security infractions by the cash handling staff for entry access; and
- Investigation by Sworn Police Officers of incidents related to revenue theft. Information is provided to Police from Treasury Accounting on variances at machine level, and from Train Control regarding machine entry and exit.

Planning: Develops estimates of revenue earned for an accounting period based on fare gate exit statistics. Provides the Controllership with information to determine if revenue collected is less than or greater than services provided.

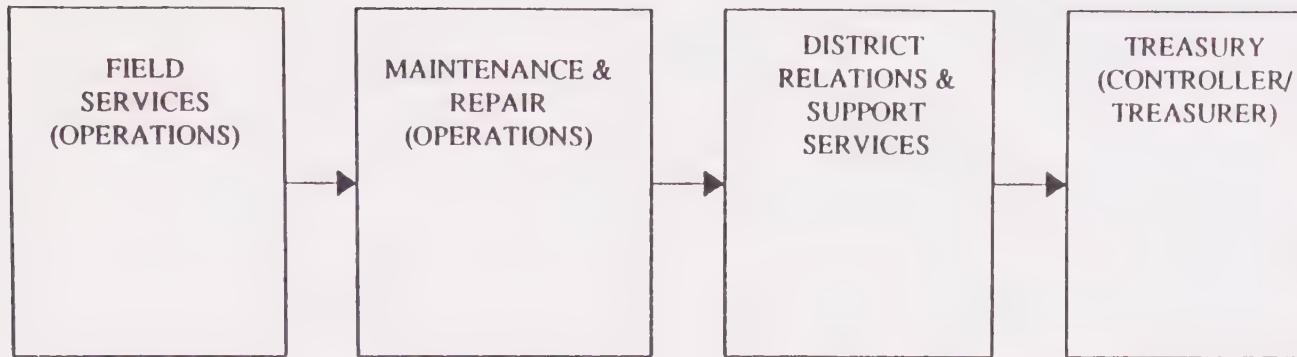
Procurement: Procures blank ticket stock for vendor according to requirements developed by Wayside Engineering.

Station Operations: Provides AFC maintenance to stop ticket jams and other problems that may occur when patron are trying to operate AFC machines. Station agents should not be able to access any parts of the machine holding cash already collected; panels are placed on the machine to restrict access. The only control measure in place regarding access to machines are the key sign-out logs kept in the station agents' booths.



# EXHIBIT II-1

## BART ORGANIZATIONS RELATED TO REVENUE MANAGEMENT AND CONTROL



### RELATED AREAS

<ul style="list-style-type: none"> <li>- STATION OPERATIONS</li> </ul>	<ul style="list-style-type: none"> <li>- COMMUNICATIONS &amp; COMPONENT REPAIR</li> <li>- FACILITIES MAINTENANCE</li> <li>- TRAIN CONTROL AND COMPUTER MAINTENANCE</li> </ul>	<ul style="list-style-type: none"> <li>- MKTG, MEDIA &amp; CUST. RELATIONS</li> <li>- PLANNING</li> </ul>	<ul style="list-style-type: none"> <li>- TREASURY ACCOUNTING</li> <li>- CASH HANDLING OPERATIONS</li> </ul>
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### REVENUE FUNCTIONS

<ul style="list-style-type: none"> <li>- CUSTOMER INTERFACE</li> </ul>	<ul style="list-style-type: none"> <li>- TESTING AND REPAIR OF AFC MACHINES</li> </ul>	<ul style="list-style-type: none"> <li>- SPECIAL TICKET SALES</li> <li>- PASSENGER REVENUE DETERMINATION</li> </ul>	<ul style="list-style-type: none"> <li>- CASH COLLECTION</li> <li>- CASH HANDLING &amp; RECONCILIATION</li> <li>- CASH DEPOSIT</li> </ul>
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### CRITICALITY TO REVENUE MANAGEMENT AND CONTROL

MEDIUM

HIGH

LOW

HIGH

### RELEVANT CHRONOLOGICAL EVENT IN THE PROCESS

TICKET PURCHASE & CUSTOMER ASSISTANCE WITH AFC MACHINES

REPAIR OF REVENUE GENERATING MACHINERY WHEN OUT OF SERVICE; PREVENTATIVE MAINTENANCE

AUTOMATED RECORDING OF AFC MACHINE ACTIVITY

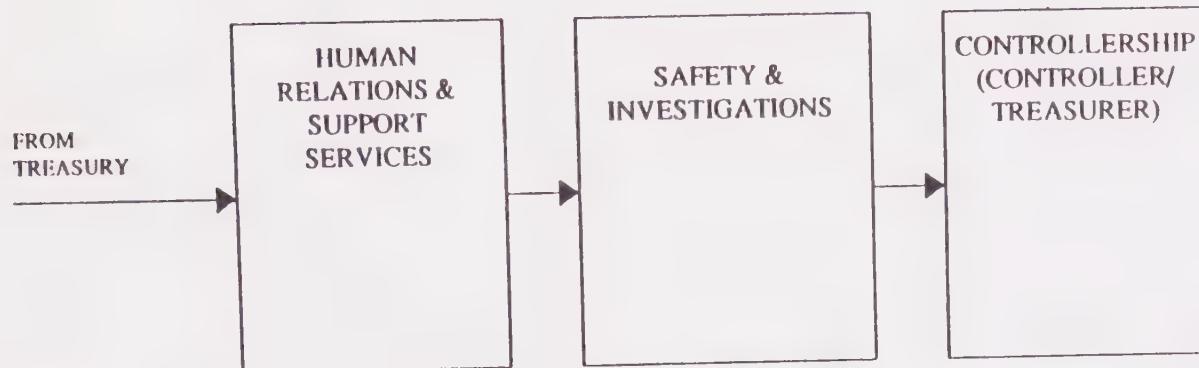
RECORDING OF REVENUE INFORMATION UPON PASSENGER EXIT FROM BART; CUSTOMER INTERFACES OUTSIDE BART STATION

COLLECTIONS OF ALL CASH & ASSOCIATED CONTROLS



# EXHIBIT II-1 (continued)

## BART ORGANIZATIONS RELATED TO REVENUE MANAGEMENT AND CONTROL



### RELATED AREAS

- MIS  
- PROCUREMENT

- POLICE  
- INTERNAL AUDIT

- GENERAL  
ACCOUNTING

### REVENUE FUNCTIONS

- SYSTEM SUPPORT FOR  
TREASURY SYSTEMS  
- ORDERING & INVENTORY  
OF TICKET AND TAG STOCK

- SURVEILLANCE OF  
CASH HANDLING STAFF  
- INVESTIGATION  
OF INCIDENTS IN FIELD  
& CASH HANDLING BUILDING

- CHECK OF  
DEPOSITS MADE  
- TRACKING OF EARNED  
REVENUE  
- JOURNAL ENTRIES

### CRITICALITY TO REVENUE MANAGEMENT AND CONTROL

LOW

MEDIUM (POLICE ONLY)

MEDIUM

### RELEVANT CHRONOLOGICAL EVENT IN THE PROCESS

PROBLEMS  
ENCOUNTERED BY  
TREASURY  
IN USING CASH COUNTING  
INFORMATION SYSTEMS  
OR REPORTING

INVESTIGATION IS CALLED  
BASED ON CASH BUILDING  
ACTIVITY AND OTHER  
INFORMATION SYSTEMS  
REPORTS

CASH JOURNAL  
ENTRIES ARE MADE  
BASED UPON  
ACTIONS INITIATED  
BY TREASURY



Treasury: Responsible for the following two major areas related to revenue management and control:

**CHB Operations:** Cash collection, handling, counting, and depositing are the responsibilities of the staff. This unit, under the direction of the Revenue Control Manager, collects and processes cash for deposit six days a week. The unit also handles pre-encoded ticket sales for special events (e.g., baseball games). This function reports to the Assistant Treasurer.

**Treasury Accounting:** Acts as control against activity performed by CHB personnel. It receives duplicate tags for all cash receptacles collected. The cash count by AFC machine is compared against the DAS estimate of collections (from Train Control) and calculations based on bill and coin meter readings. Variance reporting is generated by Treasury Accounting and is given to various parties (e.g., Police, Assistant Treasurer, Controllership). Treasury Accounting also performs tracking of machine problems and follows up with AFC Maintenance or Train Control to address suspected problems. However, if the problem is not mechanical or electrical in nature, it is referred by Treasury Accounting to the Police investigation unit.

Treasury Accounting also provides the CHB with an aggregate estimate of the day's uncounted collections based on DAS. Other responsibilities in Treasury Accounting include:

- Developing a Cash Room Report which is used by the Controllership to make journal entries;
- Encoding and securing ticket stock for off-site sales and special events; and
- Processing patron refund checks.

Train Control and Computer Maintenance (sub-organization of Power and Way Maintenance): Maintains the DAS that records the activity of vending, addfare, and fare gate machines. The system also provides alarms and other security-related reporting.

## B. HIGH-LEVEL COST ANALYSIS

To support the understanding of the role and importance of the revenue management and control function at BART, the study team developed a cost profile based on known fiscal year 1992 head-counts, expenses and capital budgets (see Exhibit II-2). Because the revenue management and control function is not a separate cost center, the study team estimated costs associated with BART activities which were directly related to revenue management and control. The purposes for developing the cost profile were to:

- Approximate costs for the entire revenue management and control operation; and
- Estimate the magnitude of the distributed costs by organization.

Head counts and expense and capital budget figures were taken from Fiscal Year 1992 budgets provided to the Management and Budget department. Where budget figures could not be totally allocated, the study team interviewed management and staff in the relevant organizational area to estimate allocation factors.



## EXHIBIT II-2: BART REVENUE MANAGEMENT AND CONTROL COST ESTIMATES

### BART Revenue Management & Control Cost Estimates for FY 1992

Department	Activity/Employee	Total People	Operating Budget	% Related to RM&C	RM&C FTEs	Total Cost	Percentage of Total Cost	
Cash Collection Police	Revenue Guards	9.0	485,836	100%	9.0	485,836		
		23.0	1,097,283	100%	23.0	1,097,283		
	Cash Collection Admin: Collection	4.0	257,477	25%	1.0	64,369		
<b>Total Cash Collection</b>		<b>36.0</b>	<b>1,840,596</b>		<b>33.0</b>	<b>1,647,488</b>	<b>20.1%</b>	
Cash Handling	Cash Handling	32.0	1,526,655	100%	32.0	1,526,655		
		14.0	925,136	100%	14.0	925,136		
	Accounting of Collected Cash	9.7	626,628	6%	0.6	40,000		
	Financial Reporting	4.0	209,896	20%	0.8	41,979		
	Performance Reporting Admin: Handling	5.0	321,846	25%	1.3	80,462		
<b>Total Cash Handling</b>		<b>64.7</b>	<b>3,610,161</b>		<b>48.7</b>	<b>2,614,232</b>	<b>31.9%</b>	
Correct AFC Maint. Maintenance	AFC Equipment Administration	34.1	2,726,061	100%	34.1	2,726,061		
		2.0	146,627	2%	0.0	2,933		
		<b>36.1</b>	<b>2,872,688</b>		<b>34.1</b>	<b>2,728,994</b>	<b>33.3%</b>	
DAS Reports & Maint Power & Way	Administration Train Control	12.0	1,523,490	1%	0.1	12,696		
		97.7	6,526,301	6%	5.4	359,613		
		<b>109.7</b>	<b>8,049,791</b>		<b>5.5</b>	<b>372,308</b>	<b>4.5%</b>	
Prevent AFC Maintenance	Preventative Capital Projects Equipment Mod	26.2	1,644,415	35%	9.2	577,000		
		6.4	313,541	65%	4.2	203,400		
		2.1	156,986	37%	0.8	58,470		
<b>Total prevent AFC Maint</b>		<b>34.7</b>	<b>2,114,942</b>		<b>14.1</b>	<b>838,870</b>	<b>10.2%</b>	
<b>Total maintenance</b>		<b>144</b>	<b>10,164,733</b>		<b>20</b>	<b>1,211,178</b>	<b>14.8%</b>	
<b>Total for Rev. Mgmt. &amp; Control</b>					<b>135</b>	<b>8,201,892</b>	<b>100.0%</b>	
<b>Capital Budget Items</b>								
Department	Item	Year	Cost					
Engineering	AFC replacement study	1991	350,000					
Engineering	AFC upgrade study	1992	173,800					
Engineering	AFC Replacement	1999	26,400,000					
Maintenance	Transfer machine	1993	240,000					
Treasury	Security cable in CHB	1991	80,000					
Treasury	50 cash carts, 2 sorters, 2 encoders	1992	1,072,000					
Treasury	New cash collect vans	1992	233,600					
Treasury	CHB expansion	1995	1,250,000					
Treasury	CHB air conditioning	1995	1,000,000					



In developing the BART revenue management and control function cost profile, costs were included only for organizations performing substantial and designated activities directly related to the function. Therefore, costs for all organization listed above in this section fo the report are not included in the cost profile. An example of this rule is Station Operations, where revenue management activities are performed, but are collateral to the principal role of customer service. Therefore, Station Operations' costs were not included in the revenue management and control cost profile.



### III. GENERAL FINDINGS AND RECOMMENDATIONS

Based on our review and research of the revenue management function at BART, Deloitte & Touche recommends that the BART Board and management team adopt the following three revenue management goals and corresponding initiatives:

**Goal (1):** **Perform internal control and security for the District's revenue management function through policies, systems, and procedures which are clearly understood, easy to use, sound, and compatible with effective and efficient operations.**

The internal control of revenue management within the District includes not only the procedures for the collection and counting of revenue, but also access by BART personnel to AFCs and tickets. The following initiatives are recommended to improve internal control and security:

- **Simplify controls in the CHB by implementing a comprehensive "Point-to-Point" controls program which ties control documents to specific points in the process when the cash is transported.** Controls for the CHB are present but are cumbersome and in need of simplification and automation. Most of the control and reconciliation activity for the CHB takes place in Treasury Accounting. While this is acceptable from a control perspective, the CHB should be able to reconcile uncounted cash receptacles through the different stations in the building in a more efficient and effective manner. A comprehensive set of specific recommendations constituting the majority of the analytical work in the study and covering each "point" in the cash handling process is presented below in Section IV. (HIGH PRIORITY RECOMMENDATION)
- **Maintain the accuracy and reliability of and initiate periodic tests conducted by Internal Audit to verify the performance of the Data Acquisition System (DAS) mechanics, electronics and information recording.** Use results from the test to calibrate the system. Although DAS functions adequately as a security device identifying specific breaches in the BART system and is now the standard for cash control, improvements are needed to fully utilize DAS as a control tool. Having adopted DAS as the principal control tool, the Controller-Treasurer should specify performance requirements for DAS concerning both revenue management security and control. (HIGH PRIORITY RECOMMENDATION)
- **Require coded key access to identify individuals accessing AFC machines and step-up security by improving DAS reporting and alarms.** While re-keying efforts and station agent sign-out keys are appropriate first steps to discourage fraudulent access to AFC machines by unsupervised parties, these actions will not provide all the information needed to attribute fraudulent acts to a particular individual. Relatively modest improvements to automate the interpretation of DAS alarm data will yield measurable benefits in District-wide security for AFCs. (HIGH PRIORITY RECOMMENDATIONS)
- **Develop comprehensive ticket security procedures to reduce the risk of fraudulent ticket manufacturing and use.** The procedures should include ticket vendors, blank ticket stock, ticket handling and exchanges, encoders, and used tickets.



- Contract out revenue guard services to significantly diminish the potential for fraternization between cash collectors and revenue guards. Management of the revenue guard contract should be reassigned to the Controller-Treasurer (from the Police) to ensure operational responsiveness. Contractor performance and security audits should be performed periodically by Internal Audit.
- Improve control and security information systems and reporting for all appropriate organizational units in the District.
- Reassign the revenue audit function (i.e., examination and verification of variances reported between actual collections and DAS control) to the Assistant Controller (from Treasury Accounting). This organizational restructuring will improve upon the "checks and balances" of the control function for revenue audit.
- Conduct a comprehensive, function-wide review of the revenue management function at BART on a regular basis through Internal Audit.

**Goal (2): Manage and operate the revenue function for the District in an effective, efficient, and cost-conscious manner and, thereby, minimize the exposure of District revenues to theft.**

Because farebox revenue represents approximately 50% of the District's annual income, the goal will be realized by processing the revenue and depositing it into BART's bank accounts as expeditiously as possible. This initiative will also add to the District's income through interest generated on balances, while significantly reducing the potential for revenue loss by theft. To achieve this recommended goal, the following initiatives are recommended for BART:

- Deposit cash collected in banks within one day of collection, adopting the following phased specific objectives and timeframes (HIGH PRIORITY RECOMMENDATION):
  - Six-to-nine month objective: deposit cash within 48 hours of collection; and
  - Nine-to-twenty-four month objective: deposit cash within 24 hours of collection, with currency paper deposited directly on the day it is collected.
- Redesign and re-engineer cash collection and handling policies, methods, procedures, workflows, and resource management to improve efficiency and effectiveness through the following activities (HIGH PRIORITY RECOMMENDATION):
  - Perform a comprehensive process analysis of handling and collection based on industrial engineering principles incorporating operational (e.g., 24-hour deposit), control (e.g., "point-to-point" program), and security initiatives;
  - Utilize DAS more fully to determine collection schedules and staff resource allocation in combination with assessments of risk of theft;
  - Design and test simple initiatives with short-term payoffs including:
    - Process the cash from IBM equipment without facing the bills;
    - Measure the impact on work load of collecting cash from less than 100% of all AFCs; and



- Investigate designing and implementing simple retrofits for IBM stackers;
- Work with unions to expedite improved scheduling of staff and shifts accommodating next-day deposit of cash receipts;
- Acquire appropriate CHB equipment to enhance redesigned operations, if justified on a cost benefit basis; and
- Perform periodic, detailed cost benefit and cost effectiveness analyses to determine if all or parts of revenue management functions would be better performed by outside contract services.

- **Develop initiatives to help realize 24-hour deposit of revenues collected through the following activities:**
  - Test direct deposit of uncounted revenues to the bank; and
  - Field-test the use of credit and debit cards and other technologies that decrease currency handling.
- **Develop operational and capital plans for replacing the IBM AFC equipment to increase the effectiveness and efficiency of cash handling operations.** Consistent with requirements for patron-service and the extension line openings, phased replacement of the IBM equipment should be undertaken. This recommendation is made recognizing that the resources required to accomplish this initiative will be very large and that careful integration with the Extension program is required. IBM equipment drives the two most time-intensive activities in the cash handling building (CHB): bill-stacking (which takes approximately 60 person-minutes per IBM vendor bag) and change magazine refilling (which takes approximately 15 person-minutes per magazine set). These tasks are required to prepare IBM bills for cash counting as well as to service coin changers. The time for these tasks could be cut down significantly if modernized equipment was installed replacing the IBM machines. The specific objectives recommended are:
  - To reduce the time required for bill stacking to five minutes per machine from the present 60 minutes; and
  - To reduce the time required for coin supply machine refills to three minutes per machine served from the present 15 minutes.Before proceeding with a large capital acquisition program, the impact of the simple, short-term payoff improvement initiatives should be integrated into the decision.

**Goal (3): Oversee the District's revenue management function actively and continuously.**

In order to maintain a high level of performance, it is important to monitor the various elements of the revenue management function on a regular basis. As with other major operating areas of BART, there are measurable performance standards which should be monitored such as: average length of time to deposit receipts; size, number, and frequency of revenue variances; performance of the AFC equipment; and number of prosecutions for thefts. The following specific objectives are recommended to improve management oversight of the revenue management function:



- **Develop and present to the Board and senior management regular reports regarding performance of revenue management in terms of operations, productivity, and variances.** These ongoing reports should be supplemented by formal internal performance audits approximately every two years. Reliable data must be provided to all levels of management to ensure an adequate audit trail of all revenue-related activities. The Board and senior managers must be assured that BART has the necessary controls and systems to detect revenue loss in a timely manner and provide reliable evidence to identify the source of problems.
- **Continue the special Board-appointed oversight group to monitor the planning and implementation of a coordinated improvement program.** The oversight group should continue to be composed of the President of the Board or designee, the General Manager, and the Controller-Treasurer. It is estimated that the required term for the oversight group will be approximately 24 months.
- **Establish a program management team to implement improvements for the District's revenue management control, operations, security, and organization.** The program manager should carry the authority and responsibility of implementing changes throughout the District, crossing traditional organization boundaries, if necessary. The program manager should submit an initial plan to the oversight group within 30 days of approval of the program.



## IV. SPECIFIC REVENUE MANAGEMENT CONTROL RECOMMENDATIONS

### A. INTRODUCTION

A major part of the review of the revenue management and control activities at BART was focused on the cash management controls used to ensure the integrity of revenue collection and handling activities and the security of the District's revenues from both an external and internal perspective. Exhibit IV-1, BART Cash Flow and Control, is included below and contains a summary representation of the complexity of the control process at BART. Generally, the basic revenue management controls are in place for revenue management at BART, however, many of the processes are manually driven, and the level of automation is quite low. Those elements of the control process which are presently automated have not been maintained on a priority basis which creates a weakness in the revenue auditing process. As a result, it is difficult to determine whether or not there are revenue losses based on the variances produced. The revenue management controls presently in place at BART are in need of improvement and the study team has developed detailed recommendations for the following eight control activities:

- Field Set-Up;
- Collection of Revenue and Servicing of AFC Machines;
- Collectors Check In, Next-Day Loading;
- Cash Sorting and Counting;
- Filling of Magazines and Cubic Kits;
- Vault Control;
- Cash Counting Reconciliation; and
- Revenue Audit.

These activities incorporate the following six basic control points in the cash handling process:

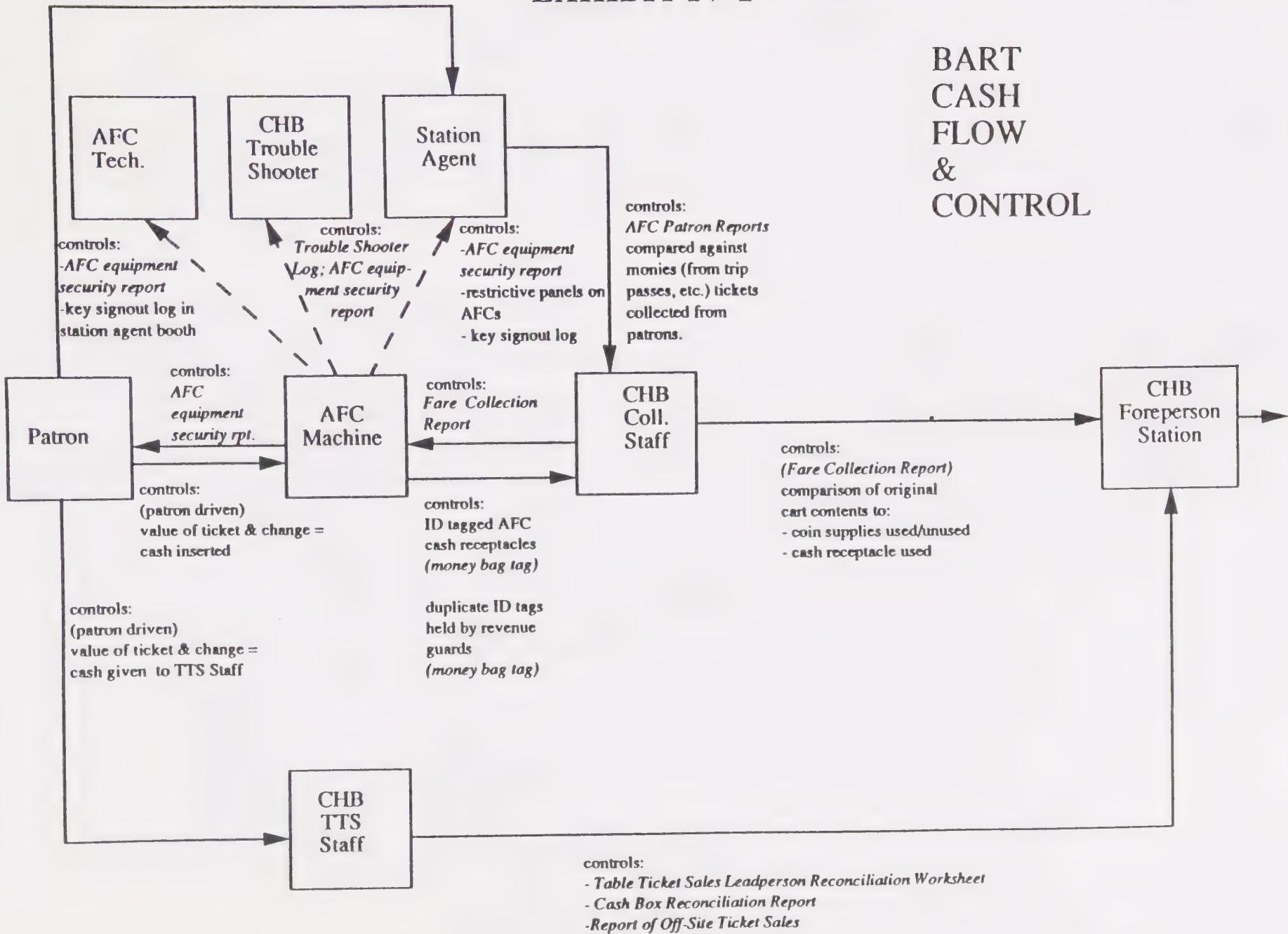
- 1) Verification of pulled revenue containers.
- 2) Hand-off of revenue containers from collectors to counters.
- 3) Match of pulled revenue containers to counted containers.
- 4) Verification of imprest fund balance.
- 5) Verification of vault contents.
- 6) Confirmation of deposit.

At BART, over 20 forms and reports are used to document the control process. The controls between each cash management function are in place, but are difficult to follow which undermines the basic accountability in the cash handling process. For instance, there is no formal process for the collection crews to hand off the full money bags to the counting crews, creating a gap in accountability for the District's revenues.



## EXHIBIT IV-1

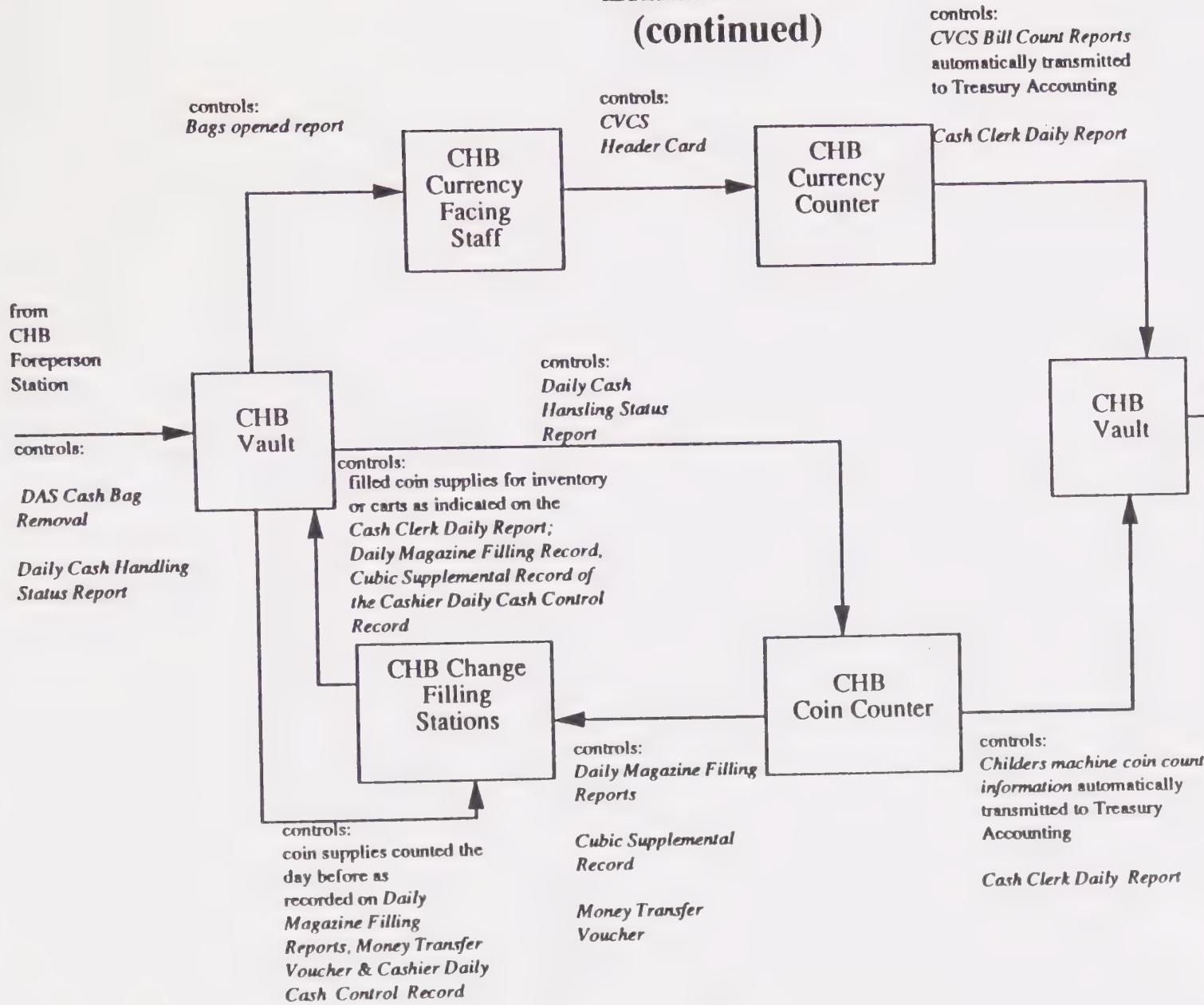
### BART CASH FLOW & CONTROL





# EXHIBIT IV-1 (continued)

## BART CASH FLOW & CONTROL

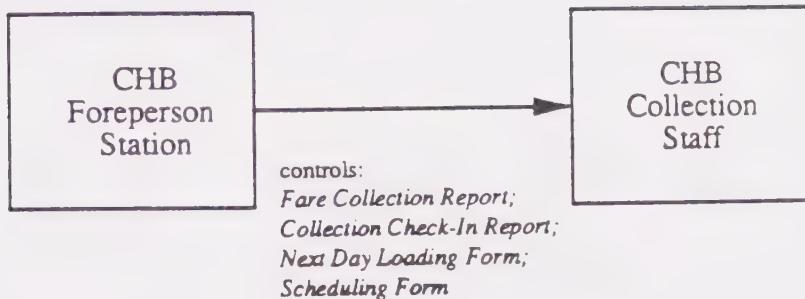




The following sections analyze the controls for the key activities in the cash handling process. The recommended enhancements are intended to simplify and strengthen the point-to-point controls through automation, elimination of many of the forms, and capture of appropriate data.



## B. FIELD SET-UP



### Forms Used

- Fare Collection Report
- Scheduling Form
- Collectors Check In Report
- Next Day Loading Form

### Work Performed By

- Collection Crew - 15 persons, plus 5 Early Bird positions, staff three crews for a six-day operation.
- Collection Foreperson - 2

### Control Activities

- The Fare Collection Report is used to identify the items needed to service the automatic fare equipment. This includes revenue bags to replace those which are pulled for counting, full sets of coin magazines to service the IBM changers, coin sacks to replenish the Cubic addfare and Cubic vendors, and tickets for the vendors.  
  
This report records information at the station level with several exceptions for those stations which have low activity. These stations with low activity are combined on a single report.

To help in developing the daily requirements for each station, a history of activity (for each AFC) is maintained by station.



## B. FIELD SET-UP (continued)

- Secondly, a Scheduling Form is used to develop a schedule for the collection crews. This is manually prepared. The crews are rotated on a weekly basis in terms of both route and teams.

### Issues

- The data for the Fare Collection Report is manually prepared and requires considerable time to complete.
- The Fare Collection Report is prepared for the most part at the station level, however the smaller stations are combined on a single report. This makes it hard to track station level servicing activity.
- The scheduling is manually developed, also requiring extra time.

### Sub-recommendations

- Automate the development of coin and bag requirements for the Fare Collection Report.

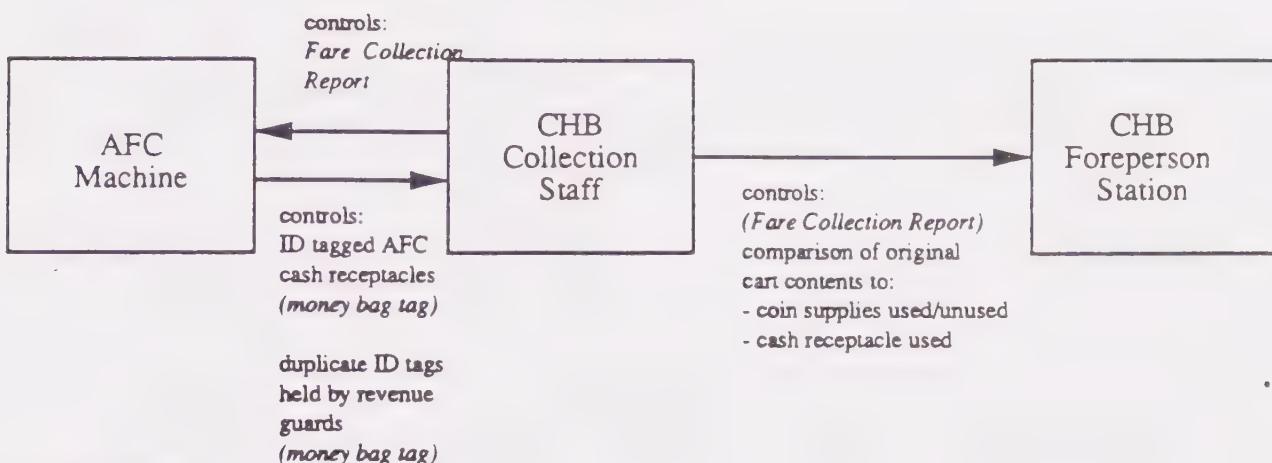
By automating the database of historic usage, the working coin requirements may be able to be reduced without disrupting operations. Such a system could be automatically updated over time as usage changes.
- Automate scheduling of collector crews with rotation.

This improvement would free up foreperson time and would automatically provide for a rotation pattern. AFC maintenance within BART uses such a scheduling tool. This could be easily adapted to the Cash Handling Building (CHB) needs.
- Develop fare collection reports at the station level.

This will strengthen accountability of servicing resources to the field and improve operations analysis.



## C. COLLECTION OF REVENUE AND SERVICING OF AFC MACHINES



### Forms Used

- Fare Collection Report
- Money Bag Tags

### Work Performed By

- Collection Crews

### Control Activities

- The Fare Collection Report is used to record the number of money bags, stackers, magazine sets, Cubic kits, and tickets used to service each station. The identification number of the bags and stackers used to replace the pulled ones is recorded on the Fare Collection Report.
- Money Bag Tags are used to record the identification number of the money bags, bill stackers, and magazines sets that have been replaced in the AFC which has been serviced. The tags are attached with tape to the pulled item.
- Coin hoppers and magazine sets are examined and replenished/replaced, as necessary. The Cubic kits or magazine sets used to replenish each AFC is recorded on a Money Bag Tag.
- Ticket stock in the vendor and addfare equipment is replaced as required. The amount of new stock used at a station level is recorded on the Fare Collection Report.
- Meter readings for cash received and disbursed are recorded manually on the Money Bag Tags from each machine.



## C. COLLECTION OF REVENUE AND SERVICING OF AFC MACHINES (continued)

### Issues

- Under the present system, the accountability is cumbersome for the many bags, stackers and magazines since the identification number of the items placed in each machine is recorded on the Fare Collection Report at the CHB and at the AFC machine located in the station.
- The control system for the pulled bags, stackers, and magazines is cumbersome and time consuming. A tag must be individually attached with tape to each bag, magazine (set of 3), or stacker. All data is manually recorded.
- There are approximately 430 AFC machines in the 34 stations on the BART system. At present, not all AFC's are serviced every day, since some have low activity. While the amount of revenue may not be large, it is difficult to establish daily revenue estimates with only periodic collection from some of the AFC machines.

### Sub-recommendations

- Revise Money Bag Tags to record the identification number of the stacker or money bag which is pulled out of the AFC as well as the stacker or bag put into the AFC.

The focus of accountability of the cash handling process should be on the location and transfer of each bag in the system rather than at the AFC level. Changing this process will provide verification for the collection crews that they have collected the correct bags/stackers, etc.

- Use scanner and hand-held computer technology to reduce paperwork and speed operations.

Automating the record keeping process should permit the collections operation to move more smoothly and easily. The duplicate gathering of information, i.e., the amount of magazines sets and Cubic kits used could, be eliminated along with the need to tape the bag tag to each item pulled. These steps would speed the recording of data.

The majority of the data could be scanned, reducing the need for manual data entry and reducing the likelihood of recording errors.

The data which is collected in the field could be fed into a computer in the Cash Handling Building permitting automatic matching of the Fare Collection Report data with actual field work. A manifest of the pulled containers could be easily created for hand-off to the counting crews.

To automate this process will require the purchase of computerized hand-held equipment with the capability to scan and record data as well as installation of computer capability in the Cash Handling Building to receive and manage this data.



## C. COLLECTION OF REVENUE AND SERVICING OF AFC MACHINES (continued)

- Pull each AFC money bag daily.

For control purposes, each AFC should have the money bag pulled each day to account for the actual money deposited by patrons and to minimize the amount of revenue float in the system.

Once the level of use and variance pattern for each AFC machine is determined after collecting data for a three-month period, low use machines requiring less than daily collection can be identified. There needs to be a good understanding of the equipment use and variance patterns before skipping collection. The Data Acquisition System (DAS) could then be used to schedule the daily collection by AFC. Possibly some low use machines could be relocated to high traffic areas.

IBM changers are currently serviced on an as needed basis, since this coin is simply revolved within the system; this practice need not change.

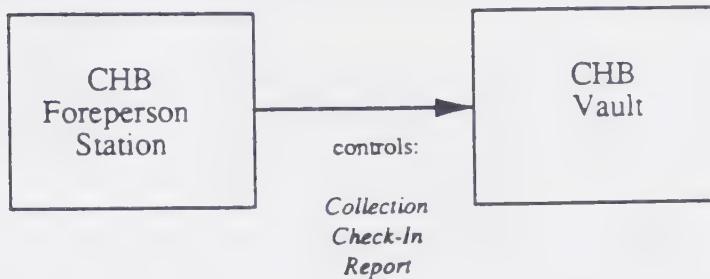
The pulling of all vendor and addfare bags should not add to the collection schedule once the collection processing has been automated.

- Revise the Money Bag Tags to capture only data that is needed.

Cubic bag tags have unused data slots; these should be eliminated. Data recorded should include date, collector identification number, identification numbers for inserted and pulled stackers, meter readings, amounts of coin and tickets added; station and AFC identification numbers should be pre-recorded.



#### D. COLLECTORS CHECK-IN, NEXT DAY LOADING



##### Forms Used

- Collection Check-In Report

##### Work Performed By

- Collection Foreperson

##### Control Activities

- The Collection Check-In Report is used to summarize the Fare Collection Reports from each station. The number of items returned unused along with the number returned to be counted are tallied on a system-wide basis. This report is used to account for all of the items which were signed out to the field. This information is then used to develop the cart loading for the next day.
- The pulled stackers, money bags, and magazines are stored in the vault overnight for counting the next day.
- The collection crews are responsible for loading the carts for the next day's collection using the Fare Collection Report prepared by the collection foreperson. The loaded carts are then stored in the vault overnight; a copy of the Fare Collection Report lists all of the items in the cart.

##### Issues

- The check-in process is entirely manual and paper intensive, making it overly complex to control.



#### D. COLLECTORS CHECK IN, NEXT DAY LOADING (continued)

- There is no comprehensive manifest of the uncounted money bags, stackers, magazines to provide a formal hand-off mechanism from the collection foreperson to the counting foreperson.

The collection crews do not prepare a consolidated list of the bags, stackers or magazines which they have pulled as they check in. The data on the money bags/stackers that have been pulled is on individual tags which are taped to each item. This information is not consolidated.

The lack of this information makes it difficult to establish full accountability for each phase in the cash handling process since the crews do not sign off on a comprehensive list of the items they have returned to the cash handling building.

- Recording of items used and returned is handled differently on the Fare Collection Report for money bags and stackers than for magazine sets and Cubic kits.

The number of magazine sets and Cubic kits used is not recorded on the Fare Collection Report. Only kits and magazine sets issued and returned appear on the form. The form does provide counts of used receptacles for the money bags and the stackers.

##### Sub-recommendations

- The reconciliation process should be automated through the use of PC equipment and database software. This would work in conjunction with the scanner and hand-held technology used in the field.

Automating this process would eliminate the need for most paperwork now used. Reports could be produced to assure that all the items which were sent to the field have been properly accounted for.

- A manifest listing of all uncounted revenue containers by individual identification number should be maintained to establish accountability for each phase in the process.

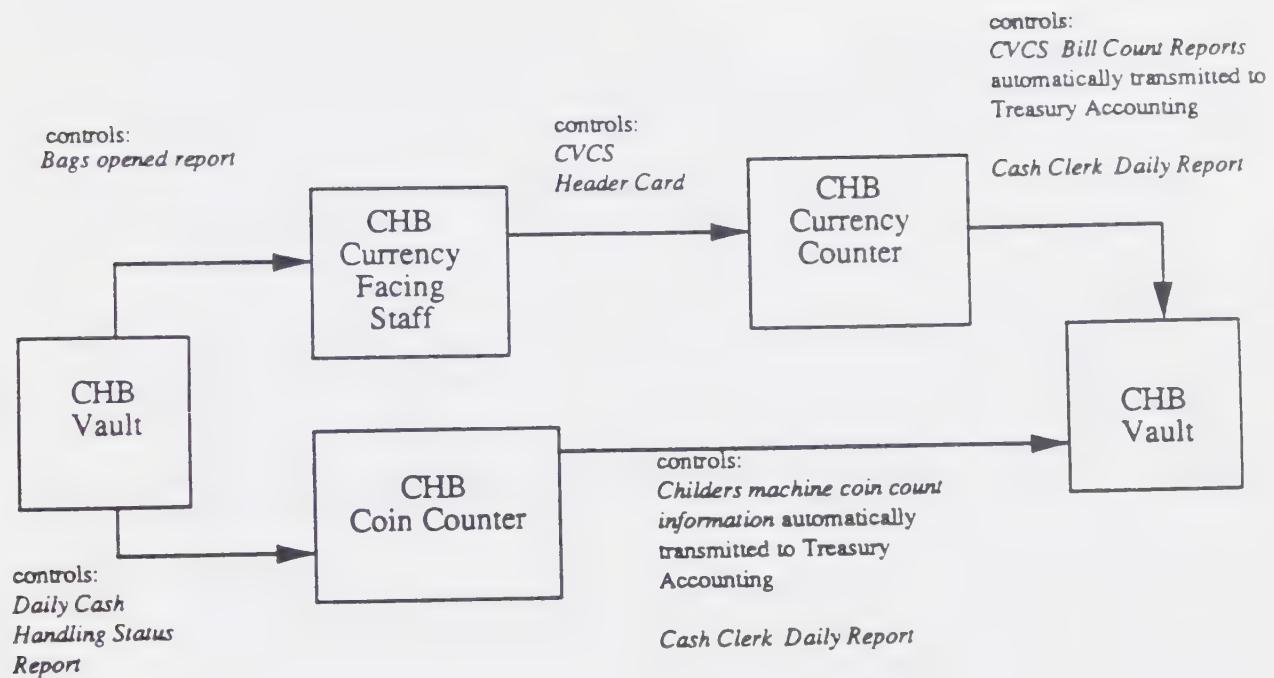
Such a manifest will protect both the collection and counting staffs in the hand-off process by identifying which bags have been delivered and received. This manifest would also provide a list of the items stored in the vault waiting to be counted. Having an audit trail for the entire process will provide a history of the revenue container through the entire cycle. Cameras should be used to review any questionable activities which are indicated from analysis of the paper trail.

- The number of magazines and Cubic kits used on a daily basis should be recorded on the Fare Collection Report to provide data for analysis of the needs of the imprest fund and the daily requirements for the field.

This step requires a minor modification to the Fare Collection Report to match the format for the money bags and stackers.



## E. CASH SORTING AND COUNTING



### Forms Used

- Bag Opened Report
- Header Cards
- Coins Counted Record
- Cash Clerk Daily Report
- Cash Clerk Daily Report Summary
- CVCS Bill Count Reports (Tartan system); this is a computer printout
- Cashroom Clerk's Daily Report Sheet
- Cashroom Daily Activities Sheet
- Foreign and Mutilated Money Log
- Cashier's Daily Cash Control Record
- Cash Room Vault Cart Record
- Daily Cash Handling Status Report

### Work Performed By

- Counting Staff
- Counting Foreperson(s)



## E. CASH SORTING AND COUNTING (continued)

### Control Activities

- Cash to be counted is removed from the vault and assigned to counting stations. The Money Bag Tag attached to each revenue container serves as the control document since Treasury Accounting has duplicate copies of the tags.
- As bags are opened, they are listed on the Bag Opened Report. For the IBM vendors, the bills and coins go into the same money bag. This requires that the counting staff separate the coin from the currency to permit the counting of each. The currency from the IBM AFC's must be stacked for the currency counting equipment (CVCS). As part of this task, the counting staff also arrange the bills face up. The preparation of the currency from the IBM AFC's requires approximately 69 percent of the counting staff's available hours on a given day. The IBM vendors comprise 67 percent of the total number of vendors in the BART system (122 out of 182). The mechanism in the Cubic vendors separates the coin and currency at the point of collection into coin bags and stackers for the currency.
- There are two coin counting stations. Money bags are counted and bag numbers recorded in the computer system (Tartan). In addition, each counting crew manually fills out a Coin Record (header card) to record the amount of cash counted by denomination as well as the AFC and container numbers. As each bag is counted, only the AFC numbers are recorded manually on the Coin Counted Report.
- Once the currency has been prepared, it is handed off to the CVCS counters. A Bill Record (header card) is prepared for each bag which records currency counted by denomination and the AFC and bag identification numbers. This data is recorded on the Tartan computer system and a summary is produced at the end of the day which is transferred to the Cash Clerk's Daily Report.
- The counting foreperson prepares the Cash Clerk's Daily Report Summary for all counting activity. In addition, a Daily Cash Handling Status Report is prepared to track the amount of work completed for the day.
- The counting foreperson also prepares the Cash Room Vault Cart Record which contains an inventory of all counted cash as well as magazine sets, filled and to be counted, and Cubic kits in the vault.

### Issues

- There is no centralized written record of the identification numbers of the revenue containers with uncounted cash removed from the vault and given to the counting clerks. Without this information, it is difficult to verify that the bags being counted are those which have been pulled. The hand-off from the collection to the counting crews lacks full accountability of what is being turned over and received. The cameras in the vault are used to assure that there has been no mishandling of the uncounted containers.



## E. CASH SORTING AND COUNTING (continued)

- The counting staff manually record the AFC number on the Coin Counted Record rather than the bag identification number.

To create a full accountability for the counting of the District's cash, the bag and stacker identification numbers rather than the AFC number should be tracked through the entire counting process. Separating the AFC number from the bag number during the counting process reduces the opportunity for CHB staff to develop a sense of revenue patterns by location. AFC number to bag/stacker identification number matches can be stored in a PC.

### Sub-recommendations

- The bag and stacker identification numbers rather than the AFC number should be tracked through the full counting process.

It is important to establish accountability for revenue containers as they move through the counting process. The creation of a manifest listing each container by its identification number would provide the CHB staff with the necessary safeguards to indicate the complete processing of their work.

Tracking by container rather than AFC number would provide for improved security by keeping the amount of cash counted separate from AFC identification. Capturing the AFC number when items are pulled permits the necessary reconciliation at the conclusion of the counting process.

- The Bag Opened Report and Coins Counted Record should be automated to produce a list of containers counted with the identification numbers at the end of the day/shift, etc.

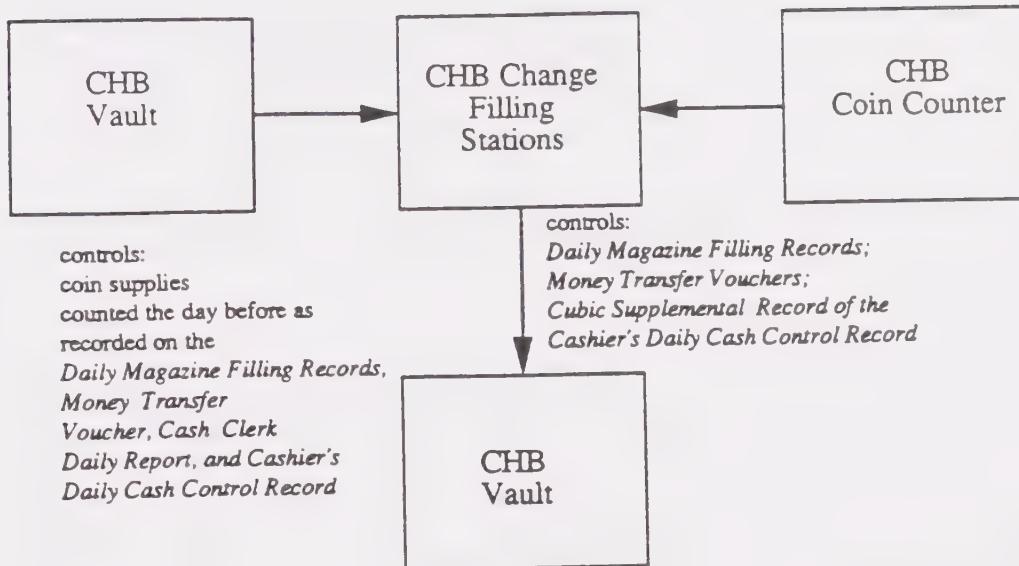
This will permit each clerk to have a list of the work he/she has accomplished as well as a check against the bags delivered from the vault.

- The hand-off process from the collectors to the counting staff should be formalized. The Bag Opened Report and Coin Counted Record could serve as the hand-off between the two staffs.

The highlighting of this activity would better assure that the currency from all bags/stackers is properly accounted for.



## F. FILLING OF MAGAZINES AND CUBIC KITS



### Forms Used

- Money Transfer Voucher
- Daily Magazine Filling Record
- Cash Clerk's Daily Report
- Cashier's Daily Cash Control Record

### Work Performed By

- Counting Staff
- Counting and Vault Foreperson(s)

### Control Activities

- An imprest fund is maintained for money to make change (for both the IBM change machines and the Cubic machines). The total amount of revenue which is committed to the imprest fund is approximately \$410,000. Of this amount, approximately \$335,000 is for the magazines and \$52,000 for the Cubic kits. A portion of this revenue is in the field in the AFC equipment; the balance is in the Cash Handling Building. The imprest fund transfers and balances are maintained on the Cashier's Daily Cash Control Record.



## F. FILLING OF MAGAZINES AND CUBIC KITS (continued)

- On a daily basis used magazines and Cubic nickel and quarter coin bags are refilled to maintain an adequate supply to service the AFC equipment. The Daily Magazine Filling Record and Cubic Supplemental Record of the Cashier's Daily Cash Control Record is used to record the source of coin used in this process.

This activity requires at least two staff for a 10 hour shift.

- The Money Transfer Voucher is used to record the coin transferred from the sorting operation and the vault to the filling stations.

### Issues

- The method of determining the amount of full magazines and Cubic kits needed to supply the AFC equipment is based on the amount of coin disbursed.

Based on preliminary analysis, the quantity of kits and magazines that are used on a given day determines the amount filled for that day. The number of magazine sets which are stored in the vault may be high at times based on the level of daily use and in anticipation of machine (fillers) breakdowns. This is problematic as this makes coin magazine and Cubic kit filling requirements based on replenishments rather than on needs.

- Imprest fund accounting is merged with the vault accounting on the Cashier's Daily Cash Control Record.

This makes it difficult to determine the full value of the coin actually in the fund at the present moment.

### Sub-recommendations

- A review of the amount of coin required to service the magazines and Cubic kits should be undertaken to reduce the size of the imprest fund.

At present, in addition to the amount of imprest fund monies in the magazines and hoppers in the field, a large amount of coin is kept in the CHB. Based on the level of daily use, it appears that the imprest fund could be reduced. However, machine failures may necessitate that some excess magazines and Cubic kits be held in reserve.

The appropriate inventory level for magazine sets and Cubic kits should be based on the highest daily use over a (quarterly) period. By reducing the turnaround time in the counting cycle, the amount of coin in the imprest fund should be able to be reduced.



## F. FILLING OF MAGAZINES AND CUBIC KITS (continued)

Specifically the imprest fund should be equal to:

Amount to fill all IBM changers +;  
Amount to fully load change in Cubic Machines +;  
Peak amount of Magazine sets for a day's servicing +; and  
Peak amount of Cubic kits needed for a day's servicing

- Imprest fund transactions should be recorded separately from the vault control record. A possible format is included below in Exhibit IV-2. [Data is for illustrative purposes only.]

There needs to be a clearer trail of activity in the two imprest funds (Magazine and Cubic) to permit better analysis of imprest funds requirements and use of funds. Key data would be transferred to the Daily Cash Control Record. The vault control record would record only the debit and credit entries of imprest funds, rather than the detail of the magazines.

- The forms used to manage the filling operation could be consolidated to simplify the control process.
- Consideration should be given to permitting a floating imprest fund balance within a specified range to allow the maximum amount of currency to be deposited.

The fund can be replenished from the next day's coin rather than artificially maintaining a balance by adding currency. Coin can be exchanged for other denominations should that be necessary. For instance, excess quarters can be traded for additional nickels and/or dimes.



## **EXHIBIT IV-2**

### **SAMPLE IMPREST FUND RECORD**

**IMPREST FUND RECORD**

WORK DAY: Apr 30 COUNT FOR: Apr 29  
YEAR: 1991



## SAMPLE IMPREST FUND RECORD NOTES

Note: 1. While the figures used represent actual data from 4/30/91, they are for illustration purposes only since several of them need to be developed.

Note: 12. This figure would not be necessary if the coin were counted on the same day it arrives in the CHB.

Note: 2 System requirement needs to be defined.

Note: 11. This figure should be developed from the actual count for magazine coin.

Note: 13. Magazine sets from previous day's collection; these are removed from the imprest fund balance to be counted.

Note: 3 This represents carts taken to the field to restock AFC's. They are removed from the imprest fund.

Note: 4. This represents the number of magazine sets returned unused from the field.

Note: 5. This represents the amount of filled magazine sets placed in inventory.

Note: 6. This represents the number of magazine sets replaced in the field which need to be counted.

Note: 7. This represents the value in partial coin sacks returned to the vault from the filling operation.

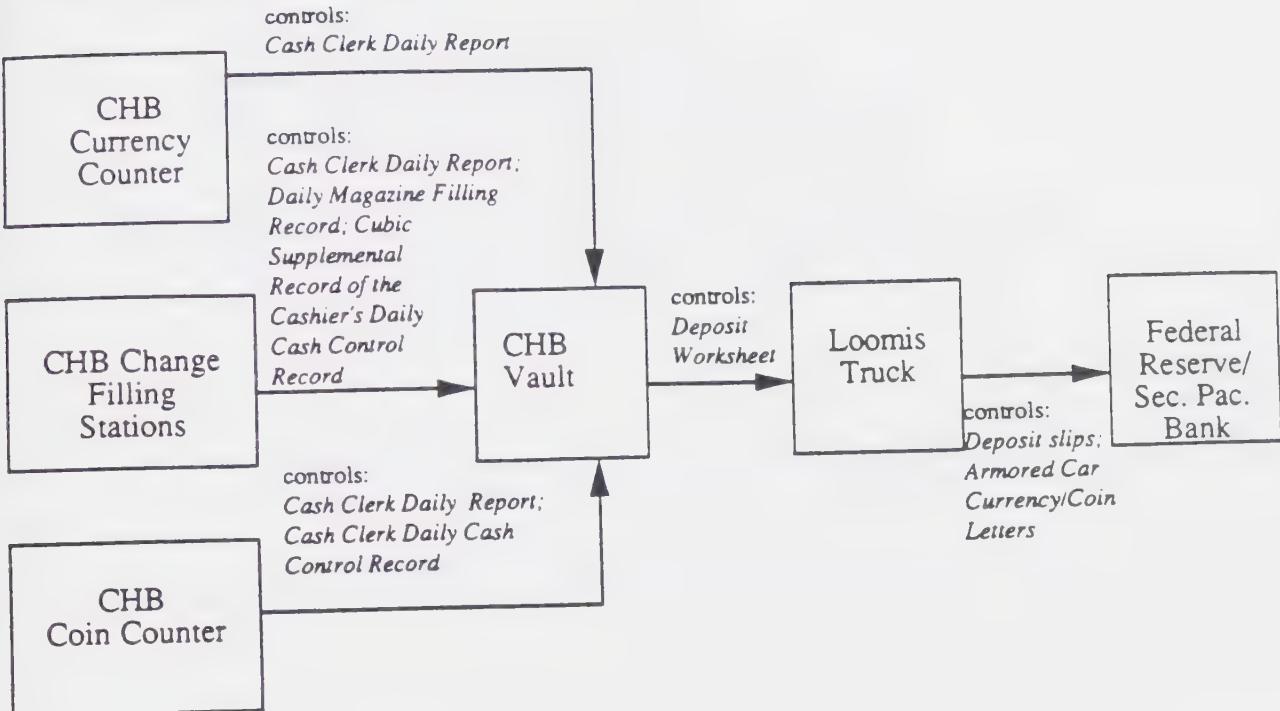
Note: 8. Assumes 2-5¢ and 2-25¢ bags per Cubic (109).

Note: 9. This figure needs to be developed.

Note: 10. This figure is not added to the total.



## G. VAULT CONTROL



### Forms Used

- Cash Clerk Daily Report
- Cashier's Daily Cash Control Record
- Cash Room Vault Cart Record
- Deposit Worksheet
- Armored Carrier Coin/Currency Letter
- SPNB Deposit Ticket

### Work Performed By

- Vault Supervisor

### Control Activities

- The vault supervisor provides control over the activities in the vault. These include:
  - The placement of flat beds loaded with uncounted money bags, stackers, magazines in the vault;
  - The storing and removal of loaded carts for field servicing;
  - The storing of counted currency;
  - The preparation of the deposit; and
  - The management of the inventory of Cubic kits and magazines sets (Imprest Fund).



## G. VAULT CONTROL (continued)

- The contents of the vault are verified on a daily basis by comparing the Cashier's Daily Cash Control Record with the Cash Room Vault Cart Record, which is a physical count of the vault contents prepared by counting staff.
- The imprest fund, which consists of coin to be used for change-giving AFCs (IBM changers & Cubic machines) is managed via the record keeping that takes place on the Cashier's Daily Cash Control Record. This report keeps a tally of coin supplies, kits and magazines moving in and out of the vault.

### Issues

- The current system for vault control is cumbersome requiring that two people be in the vault at all times and that each person sign in and out.
- The vault control record and the accounting of the imprest fund are combined in one record. This makes the understanding of the reconciliation process unnecessarily complex.
- The Cashier's Daily Cash Control Record is a manually prepared, unnecessarily intricate document.
- As part of the vault control record, Treasury Accounting supplies the CHB with DAS data on the amount of revenue that should be in the uncounted stackers and money bags.

### Sub-recommendations

- To simplify the control over vault access, the vault supervisor should sit directly outside the vault entrance, if physically possible, and accompany anyone needing to enter the vault. Cameras provide verification of vault activity. This would eliminate the need for each person entering the vault to be accompanied by another staff member, as well as the sign in/out process.

The supervisor should be accountable for all activity in the vault.

- Automate Cashier's Daily Cash Control Record to ease work load and speed up reconciliation process.

Use a PC with a database program to automate the vault control record with appropriate controls on data entry and access. A possible sample is included in Exhibit IV-3. [Data is for illustrative purposes only.]

- The vault control record and the imprest fund should be separated into two documents. This issue is discussed in more detail under the previous section.



# EXHIBIT IV-3

## EXAMPLE OF REVISED VAULT CONTROL FORM

Example of Revised Vault Control Form\*

DATE: 20 Apr

VAULT CONTROL RECORD	Full Coin Backs				Partial Coin Backs						Currency							
	5c	10c	25c	Subtotal	1c	6c	10c	25c	50c	SBA	Subtotal	\$1	\$5	\$10	\$20	\$50	\$100	Subtotal
Opening Balance	4,000.00	6,000.00	23,000.00	33,000.00	2 26	.88 95	1,853.50	787.75	1.00	1.00	2,514.48	112,768	73,375	13,900	22,040			222.083
Removed																		
Cubic Kts Magazines Tickets Magazines TBC Sacks to Mag. Filler Deposit to Fed. Deposit to SPNB Rev Bags TBC Filing From Sorter Sacks to Cubic Filler	(2,800.00)	(5,000.00)	(14,000.00)	(21,800.00)		(.88 95)	(1,853.50)	(787.75)			(2,510.20)	(112,000)	(70,000)	(10,000)	(20,000)			(212,000) (9,332)
					(1.98)				(1.00)	(1.00)	(3.98)	(17)	(3,375)	(3,900)	(2,040)			
	(1,000.00)	(5,000.00)	(15,000.00)	(21,000.00)		(150.90)		(838.75)			(998.65)							
Subtotal-Removed	(5,200.00)	(10,000.00)	(44,000.00)	(50,200.00)	(1.98)	(248.85)	(1,853.50)	(1,608.50)	(1.00)	(1.00)	(3,512.83)	(112,017)	(73,375)	(13,900)	(22,040)			(221,332)
Added																		
Current Day's Count Changers/Additaires Cubics/Vendors Filled Magazines Load on Carts Kits Filled Current Day TBC Tickets Partial Sacks to Filler Returned Unused	2,400.00	6,000.00	14,000.00	22,400.00	4 82	181.95	194.7	73.75	2.00		457.22							193.997
	2,600.00	6,000.00	35,000.00	43,600.00	0 18	152.5	604.8	973.5	1.50	2.00	1,824.48	95,202	60,515	11,430	26,360	300	100	
						168.95	613.50	987.75			1,750.20							
Subtotal-Added	5,000.00	12,000.00	49,000.00	66,000.00	5.00	503.40	1,503.00	2,015.00	3.60	2.00	4,031.90	95,292	60,515	11,430	26,360	300	100	194.748
Closing Balance	3,800.00	8,000.00	28,000.00	39,800.00	5.30	343.50	1,503.00	1,178.25	3.60	2.00	3,003.55	98,043	60,515	11,430	26,360	300	100	

\* - The figures are used for illustration purposes only.



**EXHIBIT IV-3**  
**EXAMPLE OF REVISED VAULT CONTROL FORM**  
**(continued)**

**Example of Revised Vault Control Form\***

DATE: 20 Aug

Magazine Sets				Cubic KITS				TOTAL VALUE	Tickets			Empty Revenue Bags				Revenue Bags TBC				
Spares	Carts	TBC	Total	\$3 Value	Spares	Carts	\$3 Value		Inventory	Carts		Green	Red	Blue	Total	Green	Red	Blue	Total	
5¢	25¢	5¢	25¢																	
80	78	48	225	100,627.60	105	105	77	43,680	461,904.98	2,148,000	110,000	Opening Balance								
												Removed								
(78)	(78)	(48)	(70,785)				(77)	(77)	(18,480)	(18,480.00)	(70,785.00)		Cubic Kits							
												Magazines								
												Tickets								
												Magazines TBC								
												Sacks to Mag Filler								
												Deposit to Fed.								
												Deposit to SPNB								
												Rev Bags TBC								
												Filing From Sorter								
												Sacks to Cubic Filler								
(78)	(48)	(126)	(70,785)				(77)	(77)	(18,480)	(373,309.83)		(110,000)	Subtotal-Removed							
												Added								
48	83	48	43,580	(78)	(78)	76	76			22,057.22			Current Day's Count							
(83)		29	29	39	65					230,421.48			Changers/Add/ares							
										43,580.00			Cubics/Vendors							
												Filled Magazines								
												Load on Carts								
												Cubic Kits								
												Current Day TBC								
												Tickets								
												Partial Sacks fr Filler								
												Returned Unused								
48	83	49	44,468	56	33					1,750.20			Subtotal-Added							
14	83	29	126	88,026	19	22	76	76	23,400	375,456.40	(94,500)	126,000	Closing Balance							
113	83	29	225	177,870	124	127	78	78	48,600	464,051.55	2,053,500	126,000								

On Yester and TBC and



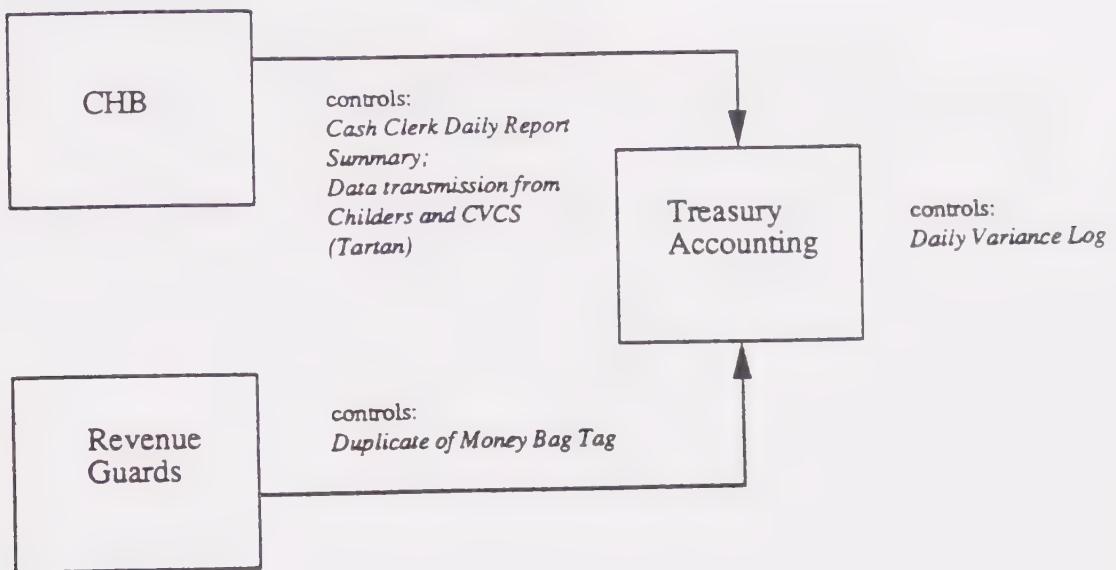
- The supplying of the daily revenue collection reported by DAS to the CHB should be discontinued to restore the separation of the revenue count from the revenue verification.

The information that should be recorded is the inventory of uncounted items by individual identification number as discussed earlier.

- The manifest of revenue containers with uncounted cash should be attached to the vault record.



## H. CASH COUNTING RECONCILIATION



### Forms Used

- Money Bag Tags
- Cash Clerk's Daily Record Summary
- Daily Cash Count Summary (Tartan)

### Work Performed By

- Treasury Accounting Staff - 9
- Treasury Accounting Supervisor - 1

### Control Activities

- Reconciliation of bags pulled to bags counted is performed by the Treasury accounting staff.

### Issues

- The reconciliation of bags/stackers/magazines pulled to bags/stackers/magazines counted is performed, but not as part of the daily control process, within the Cash Handling Building. This reconciliation for daily control is necessary to complete the counting process and to assure accountability for each step in the process.



## H. CASH COUNTING RECONCILIATION (continued)

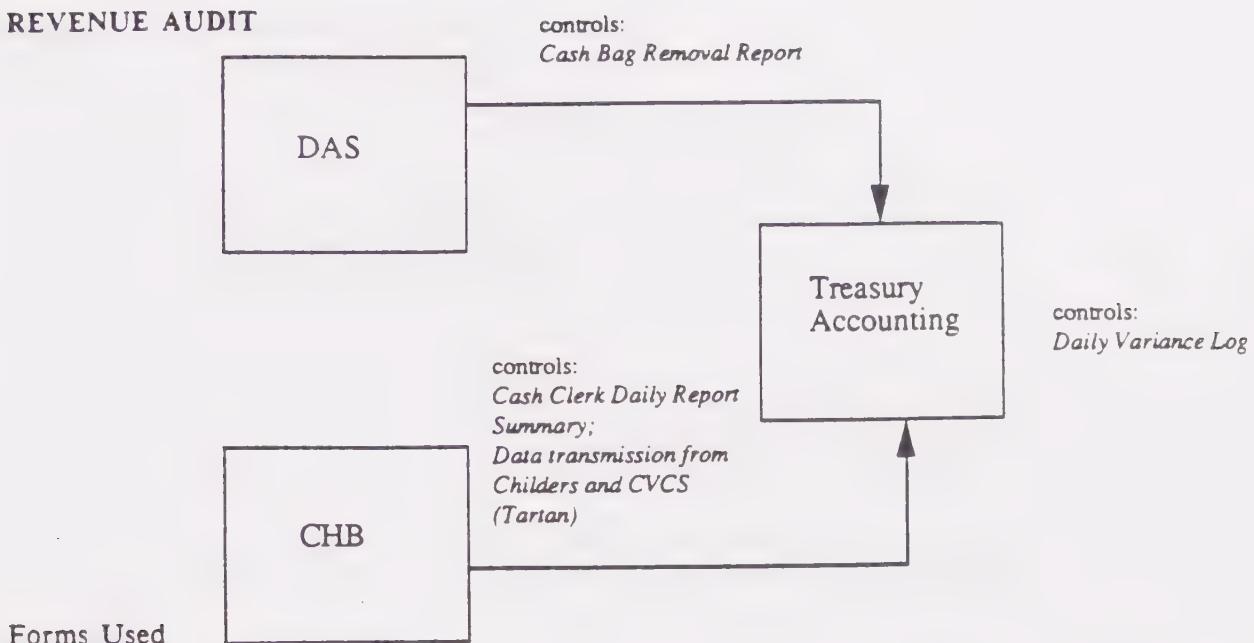
### Sub-recommendation

- The reconciliation of bags/stackers/magazines pulled to bags/stackers/magazines counted should be performed in the Cash Handling Building as part of the daily control process.

This process provides the control to assure that those bags/stackers/magazines which were pulled have been accounted for in the counting process and that they reconcile with the correct AFC machine.



## I. REVENUE AUDIT



- Daily Cash Record
- Cash Bag Removal Report
- Cash Clerk Daily Report Summary
- Daily Variance Log

### Work Performed By

- Treasury Accounting Staff - 9
- Treasury Accounting Supervisor - 1

### Control Activities

- Information from the Data Acquisition System is supplied to the Treasury Accounting staff to compare against actual cash counted.
- Information from the cash counting process is provided to Treasury Accounting via the Tartan computer system. This data is linked to each AFC machine through the reconciliation process. DAS data is collected from sensors in the AFC machine and aggregated to the levels needed. These two sets of data are then compared to determine if there are variances between the reported revenue received and the actual revenue counted. The result is recorded on the Daily Cash Record.
- All variances over a specified amount are examined to determine the cause. If there appears to be no mechanical reason, the information is passed along to the investigations unit in the BART police department for further review. Variance logs and daily control reports are given to BART police as well as to the General Accounting department.



## I. REVENUE AUDIT (continued)

### Issue

- There appears to be a large number of variances of the actual cash count versus DAS on a daily basis. Of the 152 machines that were examined for this sample, there were major variances for 40 machines, minor variances for 107 machines, and none for the remainder. Some of these are caused by equipment malfunction.

### Sub-recommendations

- The revenue audit process should be automated to speed up the ability to determine if there are weaknesses in the revenue stream that need to be investigated.
- For those variances which are determined not to be equipment related, appropriate disciplinary action against BART staff should be taken within one week of the variance.
- Increased analysis of variance patterns could provide additional insight as to causes and locations of variances.



## V. DETAILED MANAGEMENT IMPLEMENTATION PLAN RECOMMENDATIONS

To expedite implementation of the revenue management recommendations, Deloitte & Touche recommends that a high-priority program management structure be created within BART for a limited time to manage the work (see Exhibits V-1 and V-2, below). The great majority of the work for improving the revenue management function will be focused on, or have the highest impact on, operations and organizations under the direction of the Controller-Treasurer. Our assessment of the present workload of the senior management team reporting to the Controller-Treasurer is that it is heavy and difficult. The additional work required by the recommended initiatives in this study would overtax an already heavily committed team. For this reason we recommend that a program manager be reassigned from outside of the Controller-Treasurer's organization to manage the additional work under the principal direction of the Controller-Treasurer and reporting to the Steering Group. The requirements for the individual include the following:

- An understanding of BART operations, policies, and plans;
- A technical background (e.g., engineering or operations);
- Experience in managing multiple projects; and
- A proven record of delivering results on-time and within budget.

The Deloitte & Touche engagement team has identified the following projects as elements of the revenue management improvement program at BART with designated priority/urgency:

### ■ Control Projects

- Cash Handling Building (CHB) Controls (critical priority);
- Automatic Fare Collection Machine (AFC) Controls (high priority);
- Ticket Controls (medium priority); and
- Collection Route Controls (high priority).

### ■ Operations Projects

- Cash Collection/Handling Methods and Procedures (critical priority);
- CHB Equipment (high priority);
- Labor Union Coordination (critical priority);
- Test Direct Deposit (high priority);
- New Technologies and Modes (medium priority); and
- Automation of Methods and Procedures (high priority).

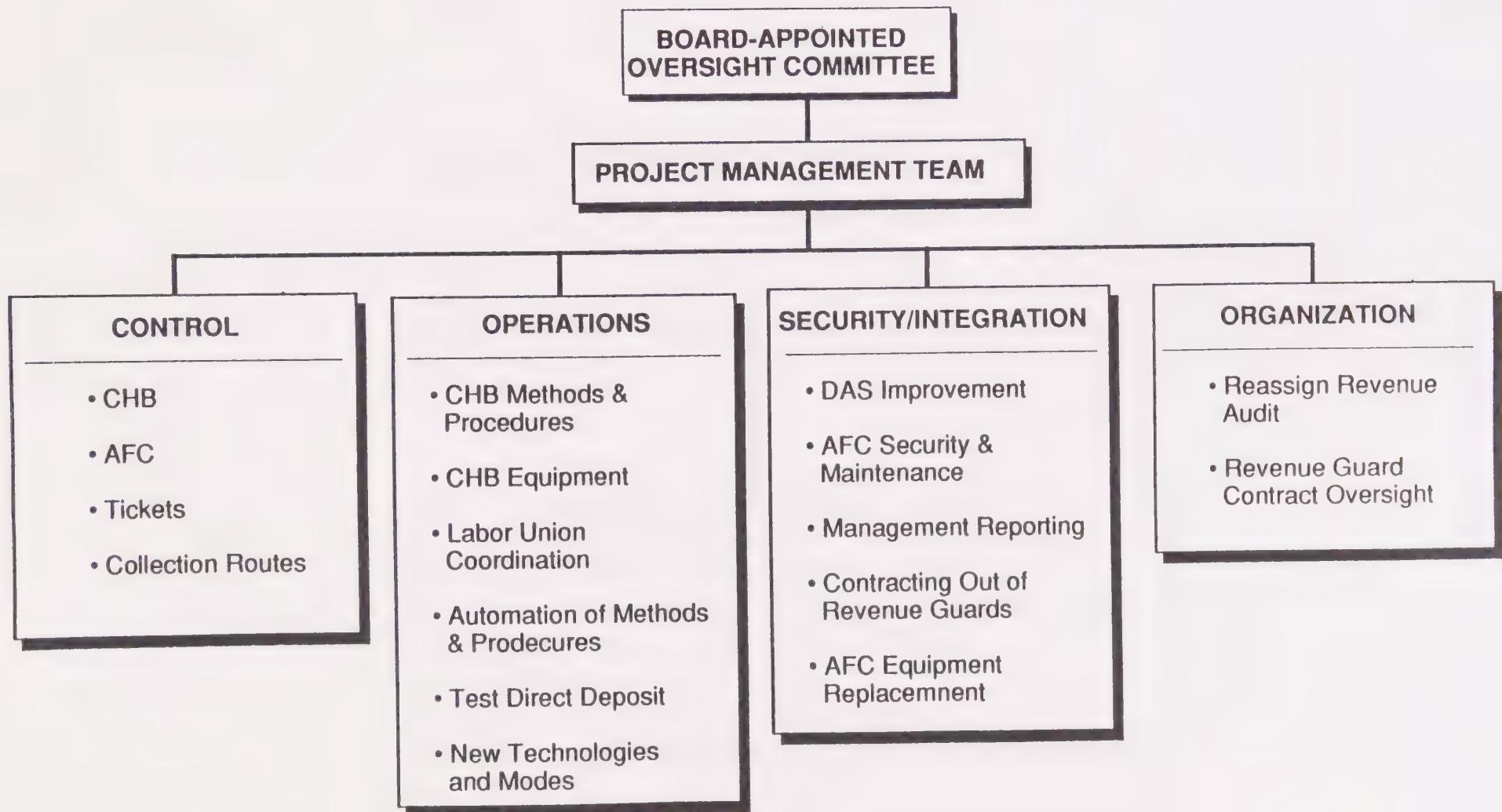
### ■ Security/Integration Projects

- DAS Improvement (critical priority);
- AFC Security and Maintenance (critical priority);
- Management Reporting (high priority);
- Contracting Out of Revenue Guards (medium priority); and
- AFC Equipment Replacement (high priority).



## EXHIBIT V-1

# Recommended BART Revenue Management Improvement Program Organization





## EXHIBIT V-2

# Recommended BART Revenue Management Improvement Program Responsibilities

### BOARD-APPOINTED OVERSIGHT COMMITTEE

- Approve Strategic and Program Direction
- Monitor Progress and Report to Board
- Expedite Activities Across Organizational Lines

### PROJECT MANAGEMENT TEAM

- Report Regularly to Oversight Committee
- Prepare and Revise Project Plans, Schedules and Budgets
- Organize and Deploy Resources for Projects
- Manage Day-To-Day Activities
- Produce Products and Implement Actions



- **Organization Projects**

- Realign Revenue Audit (medium priority); and
- Revenue Guard Contract Oversight (medium priority).

The projects recommended in this report are not intended to be all-inclusive of the effort within BART to improve revenue management. As new projects are identified and recommended projects are consolidated, the list of projects will change. A recommended phasing and schedule for the projects is included below (see Exhibit V-3). Finally, Deloitte & Touche strongly recommends that the program manager should be empowered as soon as possible to prepare detailed project plans and budgets for presentation to the revenue management oversight group for review and approval.

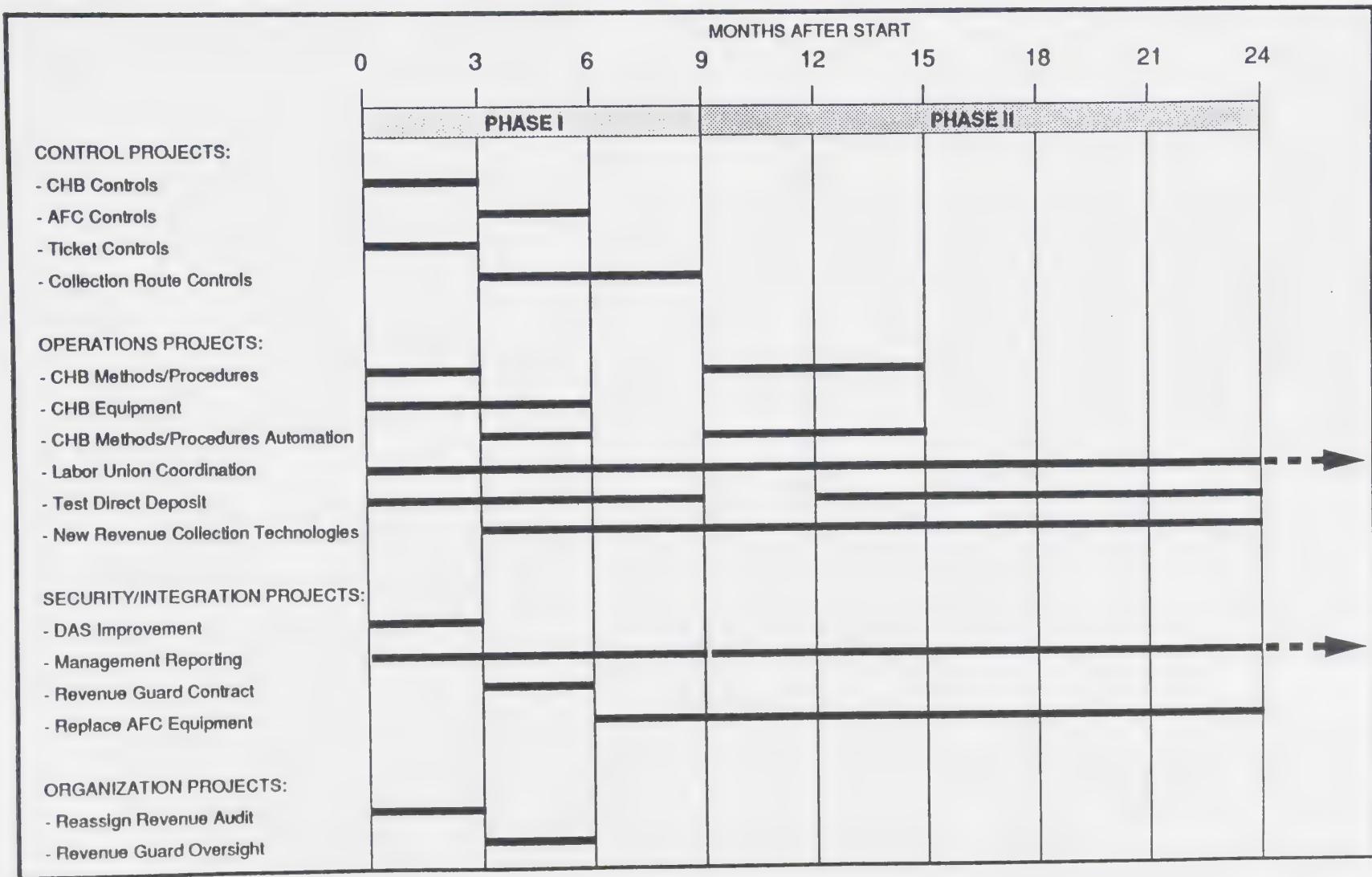
Detailed descriptions of each recommended project are presented below. Within each project description we have included the following:

- Project Title;
- Objective;
- Brief Description;
- End Products; and
- Schedule.



EXHIBIT V-3

**Recommended BART Revenue Management Improvement Program Schedule**





1. CONTROL PROJECTS



**PROJECT TITLE:** CASH HANDLING BUILDING CONTROLS

**OBJECTIVE:** To improve the accountability for the steps in the cash handling process and reduce and simplify the documentation of the process.

**BRIEF DESCRIPTION:** To improve the accountability in the cash handling process, the bag/stacker/magazine identification number should be tracked through each step of the process using a manifest of all items.

There needs to be a clear hand-off from the collection foreperson to the counting foreperson to assure that the pulled bags have been received for counting. This can be achieved by providing a listing of the revenue containers which are being delivered for counting. The Tartan system should produce a list by individual identification number of the containers counted.

Automation of this process could eliminate several documents, i.e., Coin Counted Report and Bag Opened Report, and produce a verification document for each step in the process, from collectors to counters to vault supervisor.

**END PRODUCT(s):** Clarification of revenue audit trail and reduction of paperwork through automation of the documentation process:

- Two sets of forms can be eliminated and the collection process improved.
- Improve accountability through tracking of individual revenue containers.
- Tracking individual revenue containers will provide point-to-point control.

**SCHEDULE:** Three months to:

- Identify software requirements
- Procure necessary software/hardware
- Train staff on use of new software
- Issue revised operating procedures

**BUDGET:** Cost Items

- Purchase of hardware/software
- Development of software
- Training of collection staff in use of data collection device



**PROJECT TITLE:** IMPROVE AFC CONTROLS

**OBJECTIVE:** To improve the accountability and security of the automatic fare collection equipment.

**BRIEF DESCRIPTION:** Several units within BART have access to the AFC equipment, station agents, AFC technicians, DAS technicians, and CHB collectors. To improve control over AFC access, all AFC machines were recently rekeyed, new keys issued to a more limited number of BART employees, and new sign-out procedures established. There continues to be an issue over the identification of the person who enters an AFC machine.

Only the CHB collectors and the AFC technicians have access to the revenue areas of the AFC machines. The AFC technicians carry keys for the internal areas of the AFC's, but must sign for and obtain the key to enter the AFC from the station agent's office. The collectors are issued a set of keys prior to leaving the CHB and must check them back in when they return from their route.

To provide a higher level of security, the District should pursue a key system which provides positive identification each time the AFC is entered.

**END PRODUCT:** A new key system which provides positive identification for all AFC entry.

**SCHEDULE:** Two months: - Develop specification for AFC entry key

Four months: - Procure key system

**BUDGET:** Cost Items: - Rekeying of AFC's



**PROJECT TITLE:** TICKET CONTROL

**OBJECTIVE:** Treat tickets like money. Establish control over the acquisition, handling, storage and disposal of tickets and ticket stock to prevent loss to BART due to unauthorized use or theft.

**BRIEF DESCRIPTION:** Procedures currently control inventory of printed tickets and their movement. Records track transfers and stock replacements. There are few or no controls related to procurement or disposal (used tickets).

There are multiple encoding devices throughout the organization capable of validly converting blank stock to "currency equivalent" tickets.

**END PRODUCTS:** Procedures and Responsibilities

- Purchasing specification requiring control and security of paper stock, printing plates, printed stock, over prints and inventory.
- Destruction of damaged or rejected ticket stock with devices at vendors or within BART.
- Records of machine servicing and ticket use and procedures to identify unexplained disappearance.
- Control to prevent unauthorized use of encoders.
- Procedure and equipment changes to record and validate destruction and or disposal of used ticket stock.
- Internal audit of ticket management.

**SCHEDULE:**

Six months	- Change of purchase order and material control procedures. - Encoder controls. - AFC servicing records. - Audit procedures.
Twelve months	- Recommendations for mechanical means to cancel or otherwise invalidate used tickets. Incorporate in budget process.



**PROJECT TITLE:** COLLECTION ROUTE CONTROLS

**OBJECTIVE:** To provide a clear audit trail for all items placed in and pulled from the AFC's by improving the accountability of the revenue collection process through automation and appropriate data capture.

**BRIEF DESCRIPTION:** Accountability needs to be improved through the capture of the bag/stacker/magazine identification numbers when they are placed in an AFC. Capturing this data will permit a complete audit trail for all revenue containers used in the cash handling process.

Automation of the data collection process will reduce paperwork and improve efficiency of the collection operation. Introduction of current scanner and hand-held computer technology would greatly reduce the amount of data which must be manually entered, improve the data which is captured and provide clear accountability of the process. The Fare Collection Report and Money Bag tags would be eliminated.

Prior to automation of the data collection, the Money Bag Tag should be revised to eliminate unneeded data and to capture the identification number of the items placed in the AFC's. This data should be captured to verify that the correct items have been pulled.

Daily collection of all revenue bags and stackers should be instituted to improve the accountability of the revenue management process. Gathering this data on a daily basis will provide valuable information regarding AFC activity and will strengthen revenue controls.

**END PRODUCT(S)** Automation of data capture in the revenue collection process in order to:

- Improve accountability with a clear point to point hand off of revenue collection equipment.
- Capture appropriate data for audit purposes.
- Increase efficiency in the collection of revenue.
- Reduce paperwork through elimination of the Money Tag forms and the Fare Collection Report.
- Create ability to easily account for all revenue containers as they move through the cash handling process.

A manifest of the revenue containers will be able to be tracked through each step in the process. This can be stored on a computer with hard copy produced only when there is a variance.



<b>SCHEDULE:</b>	Six months to:	<ul style="list-style-type: none"> <li>- Identify data requirements</li> <li>- Develop hardware scope</li> <li>- Procure computer device/PC</li> <li>- Training on use of new equipment</li> <li>- Institute revised operations with collection to include all AFC's on daily basis</li> </ul>
<b>BUDGET:</b>	Cost Items	<ul style="list-style-type: none"> <li>- Purchase of Hardware <ul style="list-style-type: none"> <li>■ Field scanners and data input device</li> <li>■ PC in CHB to receive the data</li> </ul> </li> <li>- Identification of Software <ul style="list-style-type: none"> <li>■ Software for field devices</li> <li>■ Software for CHB PC</li> </ul> </li> <li>- Training of collection staff in use of data collection device and PC</li> </ul>



2. OPERATIONS PROJECTS



**PROJECT TITLE:** CASH COLLECTION/HANDLING METHODS

**OBJECTIVE:** Reduce the time required to prepare and deposit cash collections in a bank. Reduce security exposure, improve cost and control.

**BRIEF DESCRIPTION:** Current cash collection and processing requires about three days: a day for collection, a day or more for preparation and counting, and a day for deposit. The long term objectives is "next day deposit". AFC equipment acquisitions will facilitate this move.

Short term projects will be initiated that examine alternate scheduling and use of equipment to accelerate the deposits schedule on a cost effective basis.

**END PRODUCTS:** Schedules and Procedures

- Use of alternate schedules to allow some or all of the collection deliveries to CHB earlier each morning.
- Use of earlier delivery schedules to count cash and verify machine information on the day of collection.
- Use of alternate route patterns to improve early cash delivery.
- Use of new equipment to accelerate cash counting activities.
- Accelerate deposit of collections from Cubic Machines.
- Separate control of Imprest Funds from the Vault Control Record. Coordination with Treasury validation of cash collections (DAS).

**SCHEDULE:** 1991 - Develop and test alternate collection and validation schedules.

- Partial implementation of successful early deposit procedures.
- Equipment purchase.

1992 - Reduce deposit schedule to two days.

- Contribute cash handling specifications requirements to extension project engineering for AFC machine purchases.

1993 - Next day or same day deposit procedures.



**PROJECT TITLE:** CASH HANDLING BUILDING EQUIPMENT

**OBJECTIVE:** Improve the processing and cycle times for cash handling within the CHB by upgrading and/or replacing processing equipment.

**BRIEF DESCRIPTION:** Based on the revised CHB policies, procedures, methods and work flows designed and developed in the Methods and Procedures project, certain mechanized equipment may be specified and justified to improve the work flow for handling the currency received each day. Empirical justifications for acquiring these equipment must be prepared based on cost and expected savings or improvements in terms of turnaround times, fewer labor hours, etc. Certain of the equipment may require large investments (e.g., bill facing and stacking) and, therefore, the justifications should reflect compelling reasons based on empirical analysis. An important consideration for the decision to proceed with acquiring new CHB processing equipment is that as new AFC equipment is brought on-line, the need for CHB processing equipment will diminish.

**END PRODUCTS:** Justification for CHB Equipment Procurements and Procurement/ Installation of CHB Equipment.

- Based on detailed workflow analyses in coordination with improved CHB work methods and procedures.
- Accompanied with detailed, empirically-based cost and benefit analyses.

**SCHEDULE:** 1991 - Develop workflow and cost justifications

1991 - Acquire and install justified CHB equipment



**PROJECT TITLE:** LABOR UNION COORDINATION

**OBJECTIVE:** To improve the relationship with the CHB union in terms of cooperation and acceptance of new work methods improvements, job and shift restructuring, mechanization and automation.

**BRIEF DESCRIPTION:** Present efforts to improve work flow and productivity have met with strong resistance from the CHB union. CHB management should share the overall plan for CHB operations improvement with the union to solicit constructive input and cooperation. Union input to the plans should be considered and included in the actions and decisions, whenever appropriate.

**END PRODUCTS:** A Process for Continuing Dialogue and Input From the CHB Union Concerning Operations Improvements

- Regular meetings with appropriate union leaders and CHB employees to solicit input and share plans and progress.

**SCHEDULE:** 1991 - Upon completion of an overall CHB operations improvement plan, commence process of union involvement.

1991 and beyond - Continue to use process, as modified through experience



**PROJECT TITLE:** TEST DIRECT DEPOSIT

**OBJECTIVE:** Reduce the time required to prepare and deposit cash collections in a bank. Reduce security exposure, improve cost and control.

**BRIEF DESCRIPTION:** Direct deposit at the time of collection offers the most rapid method of gaining control once cash is outside of AFC machines.

There are numerous complexities to gaining this advantage, however, there are several depository operations locally available that will provide the required facilities. Consulting with these operations may develop methods to segregate and control quick deposit funds. Successful procedures will also provide guidelines or requirements for extension AFC and DAS equipment.

**END PRODUCTS:** Reports, Contracts, Schedules

- Consultation reports with selected deposit facilities.
- Test reports on operational and financial feasibility of alternate deposit and control procedures.
- Contracts for partial implementation of direct deposit operations.
- Operations and control schedules for direct deposit operations.
- Recommendations for AFC machine, Cash Handling Building, and DAS facility requirements.

**SCHEDULE:** 1991 - Develop and test alternate partial direct deposit techniques.

1992 - Implement viable methods for partial direct cash deposit.

- Recommendations for implementation of partial direct deposit for AFC equipment related to extension projects.



**PROJECT TITLE:** NEW TECHNOLOGIES AND MODES

**OBJECTIVE:** To keep current with improvements in the applications of technology for collecting, recording, controlling and depositing fares.

**BRIEF DESCRIPTION:** The cash collection and handling function at BART is based, in large part, upon AFC equipment that is out-dated. Although the District will replace the majority of the AFC machines over the course of the next few years with modernized equipment, care must be taken to keep pace with dramatic leaps in technology and its application. As an example, the District is preparing to test credit and debit card technologies under a federal grant. The result of this and successor test programs should be integrated into operational planning and resulting equipment procurements.

**END PRODUCTS:** Annual Assessment of the State BART Fare Collection and Deposit Technologies

- A fare collection and deposit technology plan to be updated annually.

**SCHEDULE:** 1991 - Develop technology assessment for fare collection and deposit.  
1992 - Proceed with federal technology grant.  
1992 and beyond Develop technology plans (based on grant findings and conclusions)



**PROJECT TITLE:** AUTOMATION OF METHODS AND PROCEDURES

**OBJECTIVE:** To improve the use of automation in collecting and reporting information throughout the District concerning revenue collection and handling.

**BRIEF DESCRIPTION:** Accelerating the development and implementation of automated tools for revenue collection and handling at BART will require careful coordination and integration among operations, control, security data processing and maintenance. As an example, the introduction of bar coding for cash bags will require careful planning and implementation management.

**END PRODUCTS:** Individual Project Plans for Automation Projects

- Bar coding for cash bags
- Automated security reports from DAS
- CHB scheduling and assignment
- Others, as required

**SCHEDULE:**

1991 -	Identification of high priority automation candidates and preparation of automation project plans.
1992 -	Execution of development and implementation plans.



3. SECURITY/INTEGRATION PROJECTS



**PROJECT TITLE:** DAS SYSTEM REPORTING

**OBJECTIVE:** Provide management with DAS driven reporting to establish and maintain cash control integrity.

**BRIEF DESCRIPTION:** DAS is the primary validation mechanism for cash management and control in BART. Output from DAS is available at the close of operations each day, but is not automatically analyzed, merged with other data or distributed to assure rapid recognition of operational or security problems. The DAS system is most effective when high reliability and security is assured, and rapid action is taken in response to variances and deviations from the norm (see Appendix A for DAS test results and description of ongoing verification program).

Reports will be prepared using DAS, cash count, maintenance schedule and other data. Reports and communication will be designed to support timely decisions in Treasury, Maintenance, Security, and Internal Audit.

**END PRODUCTS:** Reports and Procedures

- Revenue audit staff perform analysis of data as well as review for variances.
- Automated merger of DAS and cash collection data (by machine). Daily variance and machine history/ maintenance analysis to Treasury, Security and Maintenance.
- Daily response to DAS/cash machine variance reports.
- Establish calibration procedures.
- AFC collection scheduling.
- Automated merger and analysis of DAS and AFC access data for security surveillance.
- Internal audit procedure for DAS calibration and validation. Procedure for audit of reporting timeliness and usefulness in security, maintenance and cash management.

**SCHEDULE:** Three months

- Cash variance reports and procedures. Automated analysis for high frequency differences.
- Audit procedures.



**PROJECT TITLE: DAS SYSTEM REPORTING (continued)**

Six months

- Automated variance and trouble analysis for all security applications.
- Evaluation of new equipment and extension plan impact on DAS.



**PROJECT TITLE:** AFC SECURITY

**OBJECTIVE:** Automate and routinize the processes and procedures associated with AFC machine security. Achieve more rapid and effective use of current information.

**BRIEF DESCRIPTION:** Currently the DAS system prepares a volume of data critical to AFC security and maintenance operations. The data requires significant analysis by revenue audit staff to pin-point problems and relate to other reporting.

Improved use of DAS data for security and maintenance would be possible with more automated analysis and variance and exception reporting. This reporting would also be enhanced if data from other sources could be integrated.

Finally, these reports could be manipulated to provide improved collection scheduling to improve speed, cost and security in cash handling.

## END PRODUCTS: Reports

- Design of security and maintenance exception and trend reports.
- Cash collection scheduling output.
- Programmed systems to integrate DAS and other data to produce security and maintenance support reports.

**SCHEDULE:** Three months - Design of reports.  
- Schedule for implementation.

Six months - Implement short term improvements.

### Beyond - Long term improvements.



**PROJECT TITLE:** MANAGEMENT REPORTING

**OBJECTIVE:** To improve the automation of management reporting for revenue collection and handling.

**BRIEF DESCRIPTION:** Based on the results of the control, operations and security projects, a program for generating and distributing management reports on all aspects of revenue collection and handling should be implemented. The requirements and priorities for the development of these reports must be coordinated with the MIS department and their progress toward implementation should be monitored closely.

**END PRODUCTS:** Requirements for Revenue Collection and Handling Management Reports; a Development Plan; and Initial Reports

**SCHEDULE:** 1991 - Management Reporting Requirements and MIS Development Plan.  
1992 - Initial Management Reports.



**PROJECT TITLE:** CONTRACTING OUT OF REVENUE GUARDS

**OBJECTIVE:** To improve the security and control of the revenue guard functions for collection and CHB physical security.

**BRIEF DESCRIPTION:** Because the revenue guards are so few in number (approximately 13) it is impossible to develop staffing rotation to minimize fraternization between the guards and the revenue collection and handling staff. Therefore, the District should prepare requirements for contracting out this function to a private security firm with very stringent requirements for guard rotation and assignments. Also, the procurement should result in a decrease of overall staff positions. The present revenue guards should be given the option of joining the successful bidder (stipulated in the contract) or of being reassigned within the District.

**END PRODUCTS:** Revenue guard contract with private security firm

**SCHEDULE:** 1991 - Revenue guard procurement request.  
1992 - Revenue guard contract executed.



**PROJECT TITLE:** AFC EQUIPMENT REPLACEMENT

**OBJECTIVE:** To improve the collection and handling of fare revenue within the District.

**BRIEF DESCRIPTION:** The present IBM AFCs are out-dated and contribute greatly to the inefficiency of BART revenue management. Additionally, IBM no longer supports the AFC machines and BART must plan for new equipment for the extension lines. Therefore, an integrated program for replacing the present IBM AFC equipment and purchasing new AFC equipment for the extensions should be planned and implemented. This effort will constitute a major procurement for the District and coordination among all departments will be required to make a timely and effective decision.

**END PRODUCTS:** AFC Requirements and Specifications and a Procurement Plan  
Leading to an AFC Procurement

**SCHEDULE:** 1991 - AFC Requirements and Specifications.  
1992 - Initial AFC Equipment Procurement and Testing.



4. ORGANIZATION PROJECTS



<b>PROJECT TITLE:</b>	REALIGN CURRENT FUNCTIONS WITHIN TREASURY ACCOUNTING UNIT
<b>OBJECTIVE:</b>	To create a clear division of responsibility between reconciliation of the cash handling process and the audit of the revenue collection reports for the purpose of identifying variances and possible revenue loss.
<b>BRIEF DESCRIPTION:</b>	<p>Currently, the Treasury Accounting unit reports to the Assistant Treasurer as does the Cash Handling facility. The Treasury Accounting unit is responsible for preparation of the journal entry for the District's accounting system, identification of variances between revenue reported and revenue counted, off-site ticket sales, and ticket refunds, and verification of revenue containers in the cash handling process.</p> <p>The revenue audit which involves verifying the reported cash to the actual cash counted should not be performed within the same organizational unit which is counting the cash. Both the Cash Handling facility and Treasury Accounting report to the Assistant Treasurer. To establish an adequate check and balance within the Treasurer/Controller's organization unit, the audit functions should be shifted to the Assistant Controller. Appropriate staff should also be shifted to carry out the responsibilities.</p>
<b>END PRODUCT:</b>	Reassignment of the revenue audit function to the Assistant Controller.
<b>SCHEDULE:</b>	<p>Three months:</p> <ul style="list-style-type: none"> <li>- Identify work space for transferred the staff</li> <li>- Revise organization charts</li> <li>- Revise functional statements regarding reporting relationships</li> </ul>
<b>BUDGET:</b>	<p>Cost Items:</p> <ul style="list-style-type: none"> <li>- Preparation of office space for the reassignment of staff</li> </ul>



**PROJECT TITLE:** REVENUE GUARD CONTRACT OVERSIGHT

**OBJECTIVE:** To place the management oversight of the revenue guard contract with the direct customer within BART.

**BRIEF DESCRIPTION:** The revenue guards presently report to the Police Department within the District even though they are not sworn officers. When the revenue guard function is contracted out, there will be no reason for the Police to oversee the contract. Moreover, since the functions to be performed by the private security firm will be those under the management of the Controller-Treasurer, it will be more efficient and effective to have the contract overseen by this office.

**END PRODUCT:** Assignment of Revenue Guard Contract Management to the Controller-Treasurer

**SCHEDULE:** 1992 - As the revenue guard contract is negotiated and executed.



## APPENDIX A

### REVENUE MANAGEMENT PROJECT CHRONOLOGY (PREPARED BY THE CONTROLLER-TREASURER'S ORGANIZATION AT BART)



## **APPENDIX A**

### **REVENUE MANAGEMENT PROJECT CHRONOLOGY (PREPARED BY THE CONTROLLER-TREASURER'S ORGANIZATION AT BART)**



LIST OF PROJECTS COMPLETED OR UNDERWAY IN THE  
CASH HANDLING BUILDING

A. Upon general consensus from the management team, Cash Handling Building Staff and BART police, the following measures were incorporated into standard cash handling facility operations on the date indicated. Prior to implementation, the appropriate individual/department was notified of the change.

1. On November 27, 1989, a new series of security procedures was established and listed as follows:
  - a. The inner vault door is kept closed and the key is held by the cash handling foreman.
  - b. A minimum of two people are required to enter the vault with a required sign-in sign-out sheet.
  - c. The customer refund cash box and check-book are held in the vault.
  - d. There is no personal monies allowed in the secured cash areas but a personal safe deposit box is provided for every employee in the lunchroom.
  - e. Absolutely no monies are brought from the secured cash area into any of the cash building offices.



- f. Loading bay doors are kept closed at all times when not in use.
- g. All employees are required to punch themselves on and off the time clock.
- h. All employees working at the sorting tables wear District approved jump suits which have no pockets.
- i. Any security breach observed by anyone is immediately reported.
- j. Discontinued practice of Pass Office and Trip Pass monies being sent to Cash Handling Building accounting office. All monies are counted by cash handlers in the cashroom.

2. Beginning November 30, 1989, all AFC bag numbers and Cubic stock numbers are recorded on a source document with specific money bags and bill stackers recorded and monitored to track which machines they are used in and removed from.

3. All line keys and money bag keys at CHB were inventoried. Control procedure for issuance of keys was implemented. Control key box rack was physically moved, to be accessed only by Supervisors and Management.

4. A revised list of authorized employees was developed on December 17, 1989 which may have access to the cash handling building.

5. Distribution lists for financial reports were reviewed and tighter controls were placed on the type of financial information to be released to various departments. (e.g. machine money contents). The new procedure was implemented on December 20, 1989.

6. In January 1990, it was decided by Treasury Management, separation of the Accounting Office functions from the Cash Handling operations was critical. It was recommended a new supervisory position be hired reporting directly to the Assistant Treasurer as opposed to the Manager of Revenue Control.



7. Immediately following, on January 2, 1990, BART police met with the cash facility management and union and advised that security responsibilities should include measures affecting entry of the building, searches of employee bags, purses, etc., as well as individuals, if warranted.
8. On January 21, 1990, police, AFC, and cash handling building facility personnel developed a schedule for testing various AFC machines to determine the accuracy of the DAS.
9. Discussion/coordination between BART Police and Treasury on January 18, 1990 resulted in the implementation of reporting procedures for Table Ticket Sales shortages of \$20 or more, and the processing of fraudulent bills.
10. Discussions between the Cash Facility Union and Management prompted, on February 1, 1990, a collection crew rotating schedule which discourges potential pattern establishment.
11. The management team agreed, on February 12, 1990, that a Management Supervisor should be maintained on-site during all hours of cash handling operations.
12. In April of 1990, due to the increased Special Events activities, accountability for variances in the Table Ticket Sales monies was established. New procedures of verifying cash box contents upon exit/enter of the Cash Handling Building and assignment of one Cash Handler responsible for the cash box was implemented.
13. April 1990 reviewed employees bid schedules and determined an increase in the 5 days - 8 hour cash handler slots would provide greater productivity than ongoing schedule of 4 days 10 hour slots. Future rebid schedules reflect this change.
14. May 1990 - Management enforcement of sick leave attendance policies/procedures has resulted in a dramatic decrease of sick leave usage. Comparison Data = October 1989 = 3.1% usage of hrs. worked. January 1991 = 1.5% of hrs worked.



15. June 1990 - Treasury has included in their hiring process, requirements to include background check and credit check, which has not been previously required.
16. Safety, Health, Janitorial and Pest Inspections have been initiated on a monthly basis by agreement between Treasury and Safety.
17. In early August, 1990, a new layout of the lunchroom/locker rooms was completed satisfying a BART police request to separate restrooms from locker rooms. Thus severing a potential revenue conduit leading out of the secured area. Building staff approved of the new layout and facelift.
18. On August 3, 1990 the Collection process was given a vote of confidence when the Planning Dept. undertook a special evaluation comparing the merits of using armored trains against trucks. After comparative analysis of other Transit District methods, it has reaffirmed that the current method of armored truck collections currently in use by the District was the most beneficial and efficient.
19. During the month of August 1990, many changes took place. Studies which were begun in February 1990 for a 6 - day operation (closing on Sundays) was effectively implemented on August 20, 1990.
20. On August 20, 1990 modifications were made to the CVC equipment (and Tartan) to process \$10's and \$20's.
21. The Employee Involvement program was implemented to give employees job empowerment and input to Foreworkers and above. The agreement between the cash handler/collectors' union, Treasury management and myself allows for union participation in management decisions at the facility. It provides for input from all interested individuals channeled through representatives to facility management where a decision is sought benefiting both labor and management.



22. During the months of August and September, five new temporary, pending security checks, cash handlers were added to the existing staff helping greatly to alleviate the strain of increased collection/sorting due to heavier patron use and special events table ticket sales. All new hires are subject to a security check prior to being made permanent.

23. On September 28, 1990, the installation of comprehensive video surveillance system was completed. Prior discussions between BART Police, Engineering and Treasury management determined this to be the most effective means by which complete surveillance could be maintained.

24. On October 1, 1990, an Accounting Supervisor joined the District and was delegated the following responsibilities:

- a) To reorganize the Cash Handling Facility Accounting Refund procedures and eliminate the backlog that exists in the section.
- b) Develop an Operations Manual to detail the procedures of each job function in the Accounting Section.
- c) To facilitate the pending move of the Accounting Section to the Metro Building ensuring a complete separation of collected revenues from the accounting process. This was deemed the most efficient method of internal control and will allow immediate detection of unreconciled accounts.
- d) Assist Management in monitoring and implementing Treasury initiated DAS security reports and subsequently provide irregular and erroneous findings to the BART Police.

25. The following changes were implemented during the period of October 1990 through December 1990 in the Accounting Section:

- a) Backlog of refund claims has been eliminated. Refund procedures have been streamlined by replacing a petty cash fund and manual check writing process with a PC computer program. The normal processing time for refunds is now 3



work days. Training on the PC program for 2 regular employees has been completed. Program modifications are currently underway to identify refund claims issued to the same name. All such instances will be reviewed to determine if they are the same person in order that the validity of the claims can be tested.

- b) Backlog of posting of accounting information has been eliminated. All accounting, including the issuance of the Daily Cash Record Reports, is current to cash counting activity.
- c) A program was started to advise BART Police by Speedy Memo of any unusual variances or suspected pattern of shortages noticed by CHB posters. This program is in addition to the program started in November 1989 providing the BART Police with cash ledger printouts on a daily and monthly basis.
- d) Under the "Tickets-To-Go Program", all payment checks and orders to be filled are processed within two days of receipt of check. Past practice was a delay of approximately two weeks or more prior to replenishing order and processing payment check.
- e) An Operations Manual is being developed to detail the procedures of each job function. The manual will serve as a reference document to be sure that procedures are known, understood and adhered to. It will also serve as an aid in training new personnel.

26. In November 1990, Treasury's Financial Analyst was reassigned to Acting Manager-Revenue Control and was charged with the following responsibilities:

- a) To determine productivity output levels of all cash handling job functions.
- b) Eliminate the work backlog.
- c) Reduce the overtime hours currently worked.
- d) Close on all holidays.



27. The following changes occurred during the period of November 1990 through February 1991:

- a) A performance measure was established in the Collection Counting operation and Foreworkers were held accountable for production rates.
- b) 500 bag backlogs have been reduced to approximately 100 bags per day.
- c) Overtime hours were reduced approximately 50%.
- d) Since Thanksgiving Day 1990, the Cash Handling Building has closed on all holidays.

28. As of December 1990 Treasury has completed the selection of a banking institution for the Credit/Debit Vending pilot program. (See Future Goals B.)

29. December 1990 - A reporting process was developed to assist the Train Control personnel in identifying the cause of errors on the DAS information reports. The actual data is compared to the DAS data to pinpoint variances against hardware/software to determine the necessary adjustments. Use of the comparison of DAS and actual collections tests the accuracy of the accounting records and spotlights instances of unusual variances which can then be investigated by the BART police for cause such as pilferage. On hardware failure items, the train control personnel will correct.

30. In January of 1991, Train Control Supervisor advised Treasury Management four AFC machines were not hooked to DAS. Inquiries by Treasury generated actions which now resulted in all AFC machines being monitored by the DAS Monitor Systems.

31. As of January 1991, Treasury has assisted Train Control personnel in developing a report based on the actual time of AFC bag removal by the AFC Collectors. Upon completion of the development of the DAS reporting process variances, (accuracy test of the DAS data) the report should prove to be quite valuable.



32. January 1991 - More efficient, newer equipment is being studied for purchase, e.g. shredder purchased recently. Considering other counting equipment which will reduce labor-intensive jobs, e.g., converting IBM equipment to Cubic.
33. February '91 - Duplicate AFC machine tag program implemented to control/preserve actual meter readings being changed.
34. The Accounting Section was moved to the LMA Building and separated from the cash handling facilities in February 1991. The vacated area will provide the space to relocate the CHB Managers' offices to provide better visibility and more control of the cashroom operations.
35. Since November 11, 1990, the supervisors have conducted surprise visits to the collection crews. This serves to allow supervisors to see actual collection procedure and lets collection crews know they are being monitored for operation efficiency.
36. Since the new management team began in November 11, 1989, overtime has been sharply curtailed, however, potential strike impasses have resulted in sporadic bouts of necessary overtime to cover for sick absences.
37. In June 1990, Treasury management initiated a credit check program with Employee Relations. Since then, Employee Relations has teamed with legal to determine whether credit checks were acceptable. Treasury is currently awaiting a decision.
38. The entire project to move the supervisors' offices and restructure the CHB floor plan was completed by August 1991. The initial planning began in August 1990 when changing rooms were moved to facilitate a more secure environment.
39. In December of 1990 management initiated new uniforms for inside and outside collectors. District policy has always required uniforms to have sewn pockets on pocketless uniforms. The expiration of the Aratex contract (uniform applier) in April 1991 allowed management to respecify District uniforms and enter a two year contract with UNITOG which met the security requirements of the District.



40. The frequency of the AFC machines pulled on a daily basis allowed for a possibility decrease of potential theft into 24 hour periods. District management increased the size of the CHB staff by five. During the months of August and September 1990, project was initiated to allow for increased frequency of bag pulls on the AFC machines.

41. In November 1989, the new management team was appointed and initiated for project replacement of changers and IBM vendors as current contact with outside vendors on the replacement of IBM changers and new bulk load equipment which is expected to substantially reduce labor overhead.

42. Since November 11, 1990, Treasury management has been working with train control to establish and implement an accurate DAS. This is currently being undertaken by working with train control personnel and AFC technicians to audit each individual stations.

43. As of January 1991, the Assistant Treasurer reviews tapes of CHB daily activities. The tapes are then recycled after one week. Tapes should be reviewed by management to help determine any possible operation inefficiencies.

44. A second lock on the vault day door was installed requiring a minimum of two individuals to open.

45. As of January 1991, all loose currency was placed in lucite trays and is placed in the minivaults to further secure the monies.

46. Through joint efforts between Police and Treasury, several security enhancements were made including complete security sweeps by cameras made every half hour, guards station in truck, bags during any activity involving loading or unloading of District funds, additionally, more comprehensive clearance procedure for visitors.



## FUTURE GOALS

- A. The cash facility requires major equipment upgrades to remain efficient and safe. Cumbersome coin sorters and fillers are approaching the end of their useful lives. Mechanical in nature, they require constant maintenance and repair. Large amounts of valuable floor space are devoted to these machines forcing an expanding facility staff to work in smaller areas. The increase in patronage since October 19, 1989 has placed a strain on the facility efficiency. Expansion of the District will put more pressure on a fixed physical facility necessitating new methods of collection/counting. Currently, the single currency sorter is marginally operational as upgrades are being installed to cope with an increasing load. It is anticipated that a second machine will be necessary in the next year.
- B. The Division continues to participate with Planning, Police and Engineering Departments in the design development of the new pilot debit/credit vendor machine provided for by MTC grants. These machines will accept \$1, \$5, \$10, \$20 bills and dispense high-value AC/BART plus and UNIVERSAL FAST PASS tickets. Security is a great concern
- C. The BART Police continues to receive all DAS reports which include the removal/opening of the AFC and change machines. Further, an alarm rings only in the Police Department when an AFC machine is being tampered/raided and it is my understanding that the Police are dispatched immediately to investigate. Further, the Treasury Division continues to provide and develop information as deemed necessary for the Police Department in their continuing investigation.



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